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Some Results of High Rubber

THE rise in rubber has roiled many and ruined some, but it may after all prove a blessing in disguise to the whole industry. The deflation that started in 1920 and ended in the slump of 1921 forced rubber manufacturers to adopt drastic measures to conform their business to a very unfavorable condition, even to the extent of writing off huge stocks of high-priced rubber to the low, current quotations, while reducing prices to the lowest economic figures ever known in the trade and absorbing millions of dollars in losses. It is safe to predict that just as the hard-hit rubber industry weathered that big storm will it again as strikingly manifest its resiliency, and even before rubber returns to a reasonable price.

While means may not be available to hasten the return of crude to a moderate price level, yet rubber manufacturers still have recourse that should before long result to their considerable advantage. They can—and they have actively begun to—initiate reforms deferred because rubber had been cheap. They can now appreciate more than ever the oft-urged advantages of standardization; for instance, the wasteful futility of 150 different types and sizes of pneumatic and almost 100 varieties of solid tires; and that the same argument holds equally good with regard to footwear, belting, hose, and numerous other products.

As simplification replaces intricacy, and as six-months-ahead order dating gives way to the saner make-as-you-go policy, production can be better controlled, a great amount of rubber conserved, factory and dealer inventories considerably curtailed, and a surprising amount of capital economized. If such retrenchment and reform, coupled with a rapidly increasing use of reclaimed rubber, plastics and assistants, and the opening up of new plantation areas, do not help to soon bring about an equitable price for crude, then shrewd observers will be much disappointed.

Thirty-Six Years of Service

We take pleasure in acknowledging the congratulations of many well-wishers at home and abroad on the thirty-sixth anniversary of the founding of The India Rubber World. Coming without previous announcement of the event, such felicitations are doubly appreciated. Much water has flowed beneath the bridges since this journal modestly made its début in October, 1889. In the elapsing time the rubber industry has experienced an expansion so vast and with ramifications more complex than even the most imaginative were able to forecast. Through all the quickening activities of this period this journal has kept pace with the swift progress, and often been found in the vanguard. Through it all its aim has been to be of real service to the industry. This has meant unremitting application, often unrequited toil, and world-wide research. It has resulted in the collection of a vast amount of data on every conceivable phase of the most complicated of world industries, all of which we hope will be available to the rubber trade for another thirty-six years.

Cheap Gasoline Substitute Predicted

IF the rubber industry depends for nearly 70 per cent of its success upon the automobile, the latter relies 100 cent upon engine fuel—gasoline. If the supply of the latter were to run low, as is often feared, motor car and tire manufacturing would get a serious setback—assuming, of course, that in the meantime no satisfactory substitute had been found for gasoline. That such a substitute will, however, be provided in ample quantity and at fair cost when needed, and the rubber industry benefited instead of imperiled, is the opinion of Dr. Harrison E. Howe, nationally known chemist and editor; and the substitute will likely be methanol, or wood alcohol minus the familiar odor, and it should prove more efficient than gasoline.

For six months past the Germans have been fairly flooding this country with a secretly-made methanol at 30 cents a gallon, said to cost them from 18 to 26 cents, while wood alcohol here costs 70 cents. The competition has caused the closing of several big American distilleries. American chemists know that the methanol can be made synthetically from carbon monoxide and hydrogen with the aid of a catalyst under high pressure and temperature, but as to its practical production they are still in the dark. But several groups of well-equipped research workers are hard at work on the problem, and they are sure they will solve it before a year passes.

Simplified Tire Sizes

THE tire industry's greatest evil is not raw material costs, but over-diversification. It is true the industry has grown prodigiously, but net returns have been far too small on the huge capital invested. Many who have analyzed the tire situation trace the trouble to the fact that the industry has been too tolerant of the exactions of whimsical customers and so reluctant to do some dictating on its own account. The favorite indoor sport of automobile engineers for years seems to have been the designing of cars with more dissimilarity in tires than in any other essentials. The tire makers bravely kept pace with the car builders for a long time, but finally, finding themselves being increasingly burdened with costly equipment and heavy raw and finished stocks, they asserted some independence.

When after many conferences an agreement had been reached whereby the half a hundred sorts and sizes then extant would be standardized at eleven, the tire makers believed they would thereafter have smooth sailing; but like a bolt from the blue came the balloon tire. With it returned much of the old-time confusion, each car builder seeming determined on having a unique set for his vehicle. Of course, this all meant increased activity in tire making, but also increased outlay, and a relapse into the needless sorts and sizes trouble.

The waste in producing and distributing the unnecessary types is far greater than is generally realized: and it has been wisely avoided by foreign manufacturers. American tire makers have been too complaisant with car builders, doubtless because competition for their orders has been keen; but they would do the builders a real service, earn the gratitude of a host of car and tire dealers and buyers, and put their own industry in a much stronger position were they but to insist that about three-fourths of the tire varieties now in use be promptly eliminated. Not long ago the sheet steel industry produced 1,819 varieties. Now it turns out but 263 and saves $2,500,000 yearly. Makers of steel reinforcing bars cut varieties from 40 to 11 and are saving $4,500,000 yearly; and the list of concerns thus advantaged through simplified practice can be extended considerably. The enterprising American tire industry should also be in that progressive list. Concerted, determined action along the line indicated should bring it a reward of millions.

Large Plantation Dividends Debatable

A FORTY per cent dividend by one of the British plantation companies in Java (the Simo Rubber Estates, Ltd.) may gratify the groundlings but make the judicious grieve. Doubtless most holders of shares for investment felt entitled to the largely-increased division of profits, and speculators for a rise were elated. Doubtless, too, earnings warranted the big dividend; and the Simo directors may fairly contend that they did nothing more blameworthy than those of the Pataling company, which in 1919 declared a dividend of 250 per cent, to be followed with but 5 in 1920, and nothing at all in 1921.

To most observers such irregular distribution would indicate generosity outrunning judgment, and they would maintain that there is just as much need of conservatism in rubber growing, with all its hazards, as in any other commercial enterprise. It is the policy of the prudent, while liberal when business is good and cautious in paying dividends when earnings diminish, to avoid excessive swings in either direction, and aiming meanwhile to maintain an ample reserve for the rainy day, for depreciation and development.

Apart from the right, the expediency of now declaring large dividends is debatable. The promotion of new plantation companies is now giving financial leaders abroad much anxiety, and the declaration of high dividends will surely stimulate the activities of reckless promoters, delay the return of stability to the rubber market, and finally prove of serious detriment to the whole plantation industry.

FORTY THOUSAND DOLLARS' WORTH OF CRUDE RUBBER stolen in New York in one fell swoop. No such wholesale theft occurred when the Rubber Stealings Committee was alive. Please page Mr. Hood.

FOR EVERY MAN SHALL BEAR HIS OWN BURDEN.—Galatians, 6:5.

A Plan for Encouraging American Grown Rubber

Rubber Association of America Asked to Support Large Rubber Planting Program—A Survey of Hevea Planting Possibilities in New Regions

In recent years rubber planting has not kept pace with the potential future demand. The peak was reached in 1918, when approximately 400,000 acres were set out, divided about equally between native and European planters. The plantings for 1922 were only 26,000 acres; for 1923, 15,000 acres; while the 1924 total will probably reach 40,000 acres, mostly in the Dutch East Indies.

Confidential statistics prepared by the United States Department of Agriculture indicate the need of 1,715,000 acres of newly planted rubber to meet the world's consumption for 1930. A. W. Still, editor of the Singapore *Straits Times*, even went so far as to state in a recent address that there will be a shortage of 3,000,000 acres by 1932, and suggests a British program to plant 1,500,000 acres.

It is conservatively estimated that the 1930 consumption in the United States alone will reach 500,000 tons, or the output of 3,500,000 acres of planted rubber. Ten, twenty or thirty per cent of the requirements would amount to 350,000, 700,000 or 1,050,000 acres respectively. While ruling prices will stimulate production it is not probable under existing conditions that the estimated need of 1,715,000 additional acres can be set out in the next five years, as it would mean an average planting of 343,000 acres per year.

Whitford Urges Cooperative Plan

In order to meet this approaching need it is suggested by H. N. Whitford, formerly chief of the Crude Rubber Division of the Department of Commerce and now connected with the Rubber Association of America, that the Association as an organization lend its active support to a large planting program for the next five years.

Mr. Whitford believes a canvass of member manufacturers might indicate many of them willing to form a pool for the purpose of guaranteeing a fixed minimum price for the rubber output of American investors for a certain proportion of the members' needs. The terms of each specific contract could be determined on its merits, and should state a definite period for planting and definite time after the rubber trees come into bearing within which the minimum price would be operative. As a basis for discussion and in accordance with the risks involved the following minimum prices for the different regions are suggested: Tropical America, 35 cents; Philippines, 30 cents; Middle East, 25 cents.

Widely Scattered Plantings Favored

It is believed that the need can be most rapidly met by encouraging bona fide investments in widely diversified regions. If the new plantings are widely scattered the chances of setting out a large acreage in a short time would be greater than if concentrated in one region. Tropical America, Africa, the Philippines and the Middle East should all be considered. The planting of large areas in any one particular region is likely to disturb the present labor balance and result in very high capital costs This has been the experience of the past in the Middle East. The interests of the probable investors are greatly diversified. For various reasons some would prefer, say, Sumatra, others the Philippines or the different regions of Tropical America. To encourage one of these regions at the expense of the others would mean less total capital invested.

Economic Conditions Must Be Met

The methods used in planting must be adjusted to meet the economic conditions of the region chosen. In the Middle East, where the industry has had its origin, the present methods are probably the best for the various countries. It would be in the interest of economy to encourage organizations already established in each particular region to undertake the plantings. In all new countries, Tropical America, the Philippines and Africa, where the available labor is limited, modified methods that involve the establishment of scattered units limited by the amount of labor available and other factors, with or without mixed culture, and encouragement of native production on a large scale might succeed in planting large areas rapidly.

In general it is suggested that for new regions central units of say 5,000 acres or less be planted at strategic places and that the organization undertaking such plantings adopt the plan of encouraging natives to plant small units nearby either on their own or on land belonging to the central organization, with the understanding that the "centrals" will buy latex of the natives at contract or local market prices.

Where the price of labor is high, planting and production methods should be adjusted to allow labor a larger share of the capital and production costs than where labor is cheap. This precludes the intensive methods of the European planters of the Middle East, where at the present time the basic wage is 20 to 35 cents per day, and would bring it more nearly in accord with the native methods in the Middle East, where rubber collectors are reported to receive as high as 80 cents per day.

Possibilities in New Regions

Haiti

The people of Haiti are mostly peasant farmers with small holdings or those with shifting methods of agriculture. No large tracts are available for planting and it would be difficult and expensive to buy up small holdings. The Agricultural Department of Haiti would like to establish a small plantation as a demonstration and training unit to encourage peasant farmers to plant rubber. The small amount of money needed might be raised in the United States with some form of contract between the Haitian Government and the investors.

Philippines

Unless the Philippine Government can be induced to change land laws to allow larger leases for a longer period only small plantings are possible. It is believed, however, that small American investments will be made if a minimum price for rubber is guaranteed. An effort should be made to get the Philippine Government behind a program to encourage native plantings.

Mexico

Conditions in certain parts of southern Mexico are apparently favorable to Hevea rubber growing. A number of well situated old Castilloa plantations offer good sites for planting Hevea after cutting the Castilloa trees and extracting the rubber from them. Present high rubber prices and financial encouragement extended to owners of Castilloa plantations in southern Mexico, Central America and western Ecuador might increase United States imports of Castilloa or caucho from an annual average of about 4,000 tons to 10,000 tons, including that from Brazil.

Brazil

Investigations made when rubber prices were low indicated that 30,000 laborers might be obtained in the lower Amazon for rubber planting with a basic wage of 25 to 35 cents per day. In the upper Amazon prices were higher. What effect the present boom in rubber will have on labor availability and prices remains to be seen.

Conditions in the Amazon are generally similar to those in Central America, and there are no large planting companies, American or otherwise, in the lower Amazon where transportation facilities are favorable and labor is cheapest. It is believed that cotton might be grown successfully with rubber. Food supplies should also be produced for the labor.

Africa

Certain countries bordering on the Gulf of Guinea, because of accessibility, are the most favorable for the commercial development of Pará rubber. While conditions for large scale operations are better than in Tropical America, Mr. Whitford believes that more progress can be made in getting a very large acreage in the ground by encouraging native plantings. The Gold Coast, for example, stands first in the world production of cacao, and practically all of it comes from native plantings of four or five acres each with British Government aid.

There are now some 30,000 acres of planted Hevea in Africa, about half of it in Uganda and the remainder in Liberia, Belgian Congo and the colonies of England and France on the Gulf of Guinea. Nearly all of this is interplanted with other crops, mainly coffee, cacao and other rubber. Besides Hevea there are considerable areas planted with Funtumia, Castilloa and Ceara, much of it abandoned, some replaced with other crops and some burned over.

Middle East

If American manufacturers do not favor encouragement of rubber planting in British colonies, the best places are Sumatra and Dutch Borneo. An obstacle to planting in Cochin China lies in the law requiring that the controlling interest in plantation projects must remain in the hands of the French. Could this restriction be removed, there are the advantages of lenient labor legislation, cheaper opening costs and freedom from taxation. Three plans are suggested for Middle East operations:

1. New capital for entirely new plantations. This involves establishment of entirely new organizations and costs are likely to be higher than the other methods, unless the project be tied up with some large existing organization and thus reduce costs of overhead.
2. New capital to loan to individual small planters, for the purpose of increasing their present holdings to a greater extent than would be possible without such capital.
3. Capital might also be used better to organize the centers of native production by establishing factories and purchasing rubber in latex or other form. Such an organization might adopt a plan to encourage natives to plant more rubber.

Central America

Central America enjoys certain natural advantages not present in most areas now available for new planting in Malaya and Sumatra. Land is very cheap—$1.00 to $5.00 an acre. Many lands are near water transportation and other transportation facilities have already been established in many regions. Large areas have soil better for rubber growing than the average soil on lands now available in the Middle East. Areas are available clear of virgin jungle and some entirely or nearly clear of second growth jungle. There are no destructive grasses to combat, such as the lalang or cogon grass of the East. Some lands have soils and topography suitable for use of plows. If lands formerly cultivated are used the hazards from root diseases are nil or greatly reduced.

Climatic and soil conditions are comparable with those of the Middle East and the few plantings and experimental tappings of Hevea indicate that the trees will grow and yield well. Until larger areas have been brought into bearing, however, nobody can foretell what the production per tree or per acre will be, or what may be the hazards of diseases of all kinds. Even jungle lands may be free of root diseases; on the other hand, diseases as yet unknown may come in. Except in Brazil and the Guianas the South American leaf disease is absent. For the above reasons the cheapest methods of planting and caring for plantations until they come into bearing are advocated, after which later plantings can be adjusted by experience to meet conditions as they arise.

Capital and Production Costs

If methods similar to those used in banana cultivation were adopted rubber might be planted at a capital cost around $60 per acre, if planted with bananas just before such fields are abandoned; or around $150 per acre where second growth jungle lands are used. These estimates are based on $1.00 labor, and allow merely for slashing the undergrowth and not weeding it as in the East. Supervisory and overhead charges must be added which could be shared by the banana operations. Entire capital costs could probably be kept to an average of $100 to $200 per acre, and possibly even below $100 on the best sites and using the more primitive methods.

While it is believed that rubber can be brought into bearing at less cost on certain lands than in the Middle East, the cost of production is a more serious problem. What labor conditions will be five years after planting cannot be foretold. There is reason to believe that labor and other costs in the Middle East will be higher than at present, but assuming present labor costs in both regions then as now, the cost of production in Central America will be around 32 cents per pound as contrasted with the present all-in cost of 18 to 20 cents in the Middle East. This assumes the Middle East standard of upkeep after the plantation comes into bearing. Lowering this to the level practiced by banana operators might reduce the cost to around 25 cents per pound. All items entering into the cost are assumed to be about the same in both regions except labor. Depreciation on rubber area is lowered to correspond with the lower costs of production.

With an actual average market or a guaranteed minimum price of 35 cents per pound, the profits per pound in the first instance would be three cents and if less intensive methods are adopted it would be ten cents. On an investment of $100 per acre, with a yield of 300 pounds per acre, and three cents per pound profit, the return would be 9 per cent; with ten cents per pound profit, it would be 30 per cent. If the investment should reach $200 per acre the return would be one-half the above. If the yields should reach 400 pounds per acre the return would be increased one-third the above.

If the maximum figures of costs given above are reached there is assurance of small profits so long as the price of rubber is maintained at 35 cents a pound delivered in New York by guarantee or otherwise. Without such guarantee and should the price fall below 32 cents or 25 cents respectively a loss would occur to the producer. If he were growing other crops also he could suspend tapping operations during times of low prices without greatly disturbing his organization, hence the advisability of growing mixed crops to avoid serious situations.

Encourage Native Planting

With rubber plantation units of 5,000 acres, more or less, established with foreign capital and scattered in favorable situations throughout tropical America, there is a basis for development of native plantings. The idea here is the same as is used for other crops like sugar cane and bananas, where natives are encouraged to plant these crops by contracts with the so-called "central." This plan to encourage native plantings not only applies to Central America but to all other regions, especially Haiti, Santo Domingo and the Philippines.

Water Cooling Quick Curing Stocks

SINCE organic accelerators have come into use, rubber goods manufacturers have had trouble with stocks scorching on mills, calenders, and tubing machines because in the quick cures, at low heats, the temperatures have gradually approached those of milling and calendering. Scorching is, therefore, not unusual and rather to be expected, particularly with ultra accelerators, unless proper means are taken to prevent it. Thus manufacturers who have tried to use ultra accelerators without precautions or changes in methods of handling their stocks have encountered serious trouble in learning how such accelerators may be readily used without difficulty.

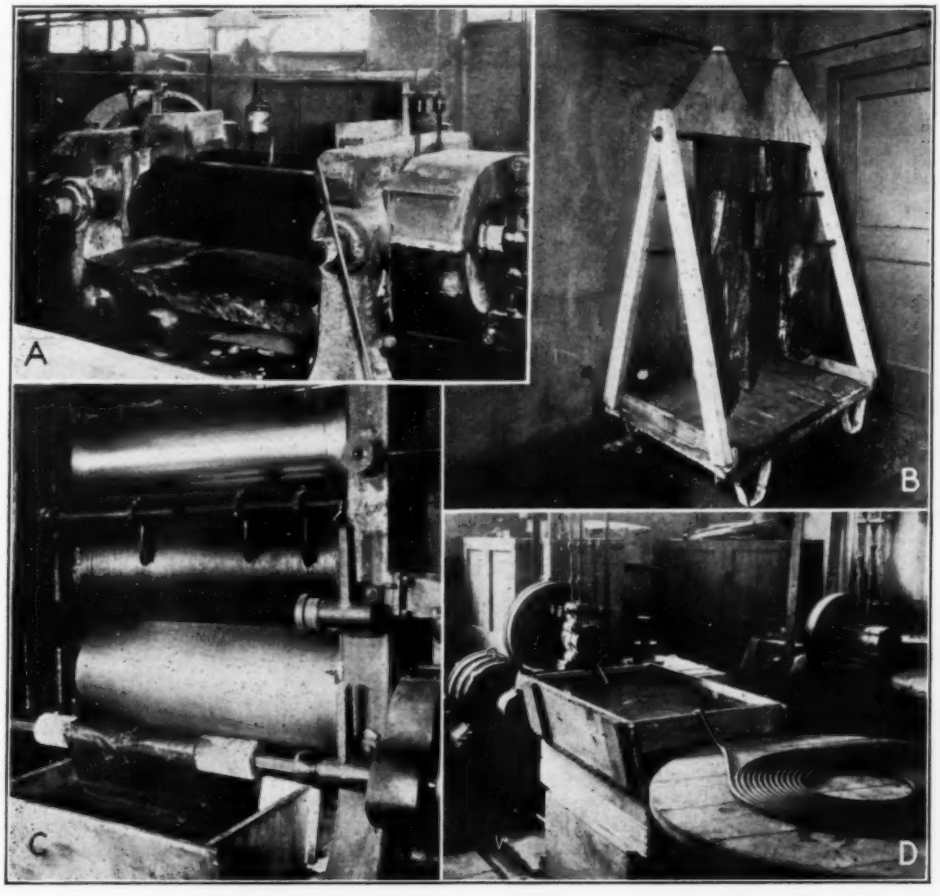
It is true that modern mills, calenders, and tubing machines are so made that the cooling water circulates closer to the rubber itself and carries away heat quite rapidly from the rubber batch, thereby preventing excessively hot temperatures. There are, however, many pieces of rubber machinery in service today that were built when efficient water cooling was not the matter of prime importance that it is now.

When rubber factories seek a more efficient water cooling system it often means that a refrigerating plant may be installed to provide circulation water through the mills, calenders, and tubers. In some plants the cooling water is repeatedly circulated from mill room to reservoir where it is cooled by spraying, while other plants are equipped to use sea or lake water.

The thickness of mill rolls and the temperature of the water used particularly in summertime results in poor cooling. Another troublesome factor is frequently insufficient supply of water, too low pressure, or if city water is used the meter charges make the cost of an unlimited flow of water too great.

These provisions for lowering rubber milling temperatures fall short, in greater or less degree, when sensitive low temperature stocks are handled. This fact has brought a marked change of practice in cooling methods whereby cooling by direct contact of water with the rubber is supplementing and supplanting ordinary indirect cooling.

Crude rubber is broken down on a mill to make it more plastic, the better to permit the incorporation of powders and their proper dispersion throughout the rubber. The means of effecting the desired plasticity is by mechanically milling the rubber. The rubber must be kept cool to obtain the maximum mechanical milling action. It then becomes plastic or broken down very quickly at very little, if any, saving in the power cost.



(A) Water Applied When Breaking Down Rubber. (B) Cooling Mixed Rubber by Spraying. (C) Calendered Sheet Cooled in Water Tank. (D) Cooling Tubed Rubber in Tank of Water

Experience shows that an efficient way of keeping the rubber cool while breaking it down is to add gradually a small amount of cold water to the rubber just as soon as it sheets around the mill roll. A very convenient method of adding water to the batch is shown as Figure A in the accompanying illustration. An oil can or a milk pail of about two quarts' capacity is provided with a faucet or petcock inserted in the bottom. The proper quantity of water, usually a pint or a quart to a 100-pound lot of rubber, is placed in the can which is swung as a pendulum lengthwise over the mill. The petcock is adjusted so that the water runs slowly on the bank of gum, thus acting as an efficient cooling medium. The water is not incorporated into the rubber but passes off as vapor and every drop of water so vaporized removes heat from the rubber.

Before compounding ingredients are added the water is shut off and the rubber is allowed to warm up permitting very soft, quick mixing and proper dispersion of the powders in the batch. It is now common practice to add accelerators during the beginning of the mix and sulphur as the last ingredient. By so doing the sulphur can readily be mixed in 3 or 4 minutes, and regardless of the temperature attained on the mill, there are very few stocks that will scorch while the sulphur alone is being added.

A further precaution to prevent scorching while the sulphur is being added is to adjust the mill rolls fairly close together, thereby forming a bigger rubber bank and a thinner sheet around the roll. This cools by air radiation faster than a thick sheet of rubber.

When the mixed batch is taken off the mill it becomes necessary to remove all its heat rapidly, and before the stock is piled in bins. There are four efficient ways of cooling the mixing immediately off the mill. (1) The hot stock is run on a small truck under an ordinary shower bath of cold water. See B in the illustration. This does not require much water and the rubber is very effectively cooled in two or three minutes; (2) The slabs of rubber are dipped into a tank of cold water for two or three minutes; (3) The hot slabs are thrown on the concrete floor and cold water from a hose is played upon them. A floor outlet is provided, for draining away the water. This is a very simple and sensible operation. It is best not to leave the rubber slabs in water until absolutely cold. If the rubber is removed within two to four minutes while still slightly warm it soon dries off, or most of the excess water can be blown off by a circulating fan. The small amount of water remaining on the rubber is soon evaporated. It is related that in one factory it has been the practice for several years to add water to heavily compounded stocks to prevent scorching, and that this water always contains a dye to disguise it; (4) Mixed stock fresh from the mill is refined through a cold calender. The top roll being kept fairly hot, the middle roll is only warm and the bottom roll almost cold. The refined stock is allowed to drop in folds on the sheet zinc covered floor. In this form the stock is dusted and placed in the storage bins. It can then be tubed or calendered at a much lower temperature than would otherwise be the case.

The idea that a compound or stock cannot be duplicated in different factories is probably correct because mixing and curing conditions are unlike in different plants. Even in the same plant differences arise due to minor changes in milling the rubber. Many of these differences can be overcome by proper cooling on the mill rolls, and especially when the compound is calendered or tubed. Calendered sheets should be passed over a cooling drum or, more effectively, directly through a trough of cold water, as shown in illustration C. Treads and other stocks from a tubing machine may readily be cooled by passing through a trough of water as seen at D. This is now quite common practice.

It is also quite well known and generally practiced, that the addition of a pint or two of water to 100 pounds of stock that has just begun to scorch or to one that is to be reworked after scorching will in a short time cause the scorched stock to run smooth on the mill. This effect of smooth running with reduced chance of scorching applies when water is added to a batch in breaking down, mixing, warming up for tubing machine and calender, or in actual tubing and calendering operations. It further allows operating at a lower temperature.

Incidentally the use of water for cooling run stocks permits dustless coating of them with soapstone by stirring a proportion of the latter into the water, thus depositing a slight coating on the stock when dry.

United States Crude Rubber Consumption

According to statistics prepared by the Rubber Division, Department of Commerce, and based on reports from 457 American factories, the domestic consumption of crude rubber during the first seven months of 1925 totaled 233,875 long tons. As 90 per cent of the consumption reported was by the fifty largest users, including subsidiary factories, and only a few of the smaller plants failed to reply, the following figures are considered 99 per cent complete and the total American consumption was probably not in excess of 235,000 long tons. The figures do not include balata, guayule, gutta percha, gutta siak, gutta jelutong, pontianak or reclaimed rubber.

Consumption by Months

1925	Plantation Pounds	Para Pounds	All Other Pounds	Total Pounds	Total Lg. Tons
January	66,426,162	2,429,039	1,217,480	70,072,681	31,282.4
February	64,047,275	2,166,149	1,422,566	67,635,990	30,194.6
March	71,220,317	2,493,393	1,437,920	75,151,630	33,549.8
April	72,005,516	2,814,240	1,433,116	76,252,872	34,041.5
May	74,039,744	2,758,088	947,461	77,745,293	34,707.7
June	74,875,374	2,634,097	1,253,471	78,762,942	35,162.0
July	73,544,214	3,254,748	1,459,892	78,258,854	34,937.0
Total (pounds)	496,158,602	18,549,754	9,171,906	523,880,262	
Total (tons)	221,499.3	8,281.1	4,094.6	233,875.0	233,875.0

Consumption by States

	Number of Reporting Companies	Crude Rubber Consumed (Pounds)	Per Cent of Total Consumption
Ohio	93	263,293,469	50.26
Massachusetts & Maine	57	56,900,778	10.86
Pennsylvania, Delaware, & Maryland	39	31,733,531	6.06
New Jersey	69	31,473,429	6.01
Wisconsin & Minnesota	14	25,929,885	4.95
Michigan	6	24,613,146	4.70
Connecticut	24	19,335,757	3.69
New York	48	18,366,744	3.50
Indiana	15	13,994,028	2.67
California	21	12,996,355	2.48
Rhode Island	15	7,939,979	1.52
Nebraska, Colorado, & Missouri	9	6,462,645	1.23
Illinois	20	5,861,588	1.12
Virginia, North Carolina, & South Carolina	7	1,671,517	0.32
Iowa	4	1,406,314	0.27
Oregon & Washington	5	728,120	0.14
West Virginia, Tennessee & Kentucky	4	701,435	0.13
Georgia, Alabama, Louisiana, & Texas	7	471,542	0.09
Total	457	523,880,262	100.00

RUBBER PRODUCTION IN TROPICAL AMERICA

Included in the report for 1924 of the Secretary of Agriculture is a brief account of government investigations now being made as to the possibilities of growing rubber in the United States and in adjacent tropical regions. Various rubber-producing trees and vines indigenous to tropical lands are being studied in order to determine their suitability for conditions to be found in southern Florida, Porto Rico, and the Canal Zone, or in the neighboring countries, while dry-country rubber plants are also being investigated in southern California, Arizona, and Nevada.

Haiti appears to offer special opportunities for these investigations, plantings of Hevea trees having been made in that republic some twenty years ago. A convenient location for experimental work near Port au Prince has been placed at the disposal of the American au horities. From what has been discovered in the West Indies, Central America, and Mexico, there is apparently little doubt that substantial quantities of rubber could be produced in tropical America, if suitable cultural systems can be developed.

Rubber Grown Commercially in the United States[1]

Guayule Production in Texas

THE only place in the United States where rubber is produced commercially, is at Marathon, Texas, located in that part of the state lying north of the big bend of the Rio Grande. There native guayule shrub abounds over a section extending 90 miles north from the Mexican border and comprising about 10,000 square miles.

The factory of the Border Rubber Co., a subsidiary of the Chas. T. Wilson Co., Inc., of New York, N. Y., has long been established at Marathon, Texas. This town is situated on the Southern Pacific Railway, 350 miles west of San Antonio and is the center of the area mentioned. Here guayule was successfully produced from 1905 to 1914 when the stock of shrub was depleted. The factory remained idle until early summer of this year.

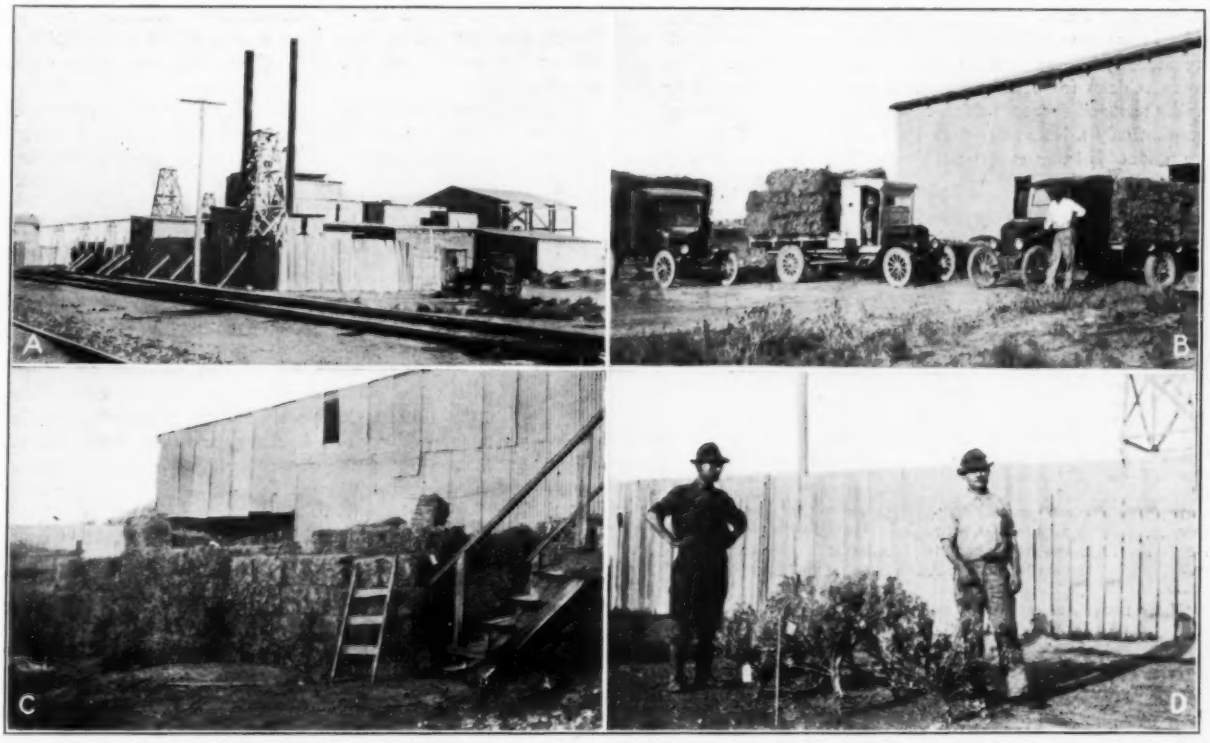
The excessively high prices prevailing in the market for plantation and other rubbers, together with the ample supply of guayule shrub restored and now available in the Marathon section led to the rehabilitation of the Marathon plant. This work was completed the past summer under the supervision of John C. Treadwell, the well-known guayule expert.

The factory is equipped with corrugated roll crushers, pebble mills, ample tankage capacity and all auxiliary facilities. These include boilers, pumps, piping and an excellent water supply so essential to producing guayule rubber on a commercial basis.

It is worth noting that for the production of guayule rubber from the shrub the prime requisites are ample supplies of water and coal. In the case of the Border Rubber Co., three driven wells at the plant easily supply the 30,000 gallons required for obtaining a ton of rubber daily from the shrub. The fuel supply of the Border company is coal brought by rail from Arizona.

The plant was started anew July 1 and in August produced 40,000 pounds of rubber. Operation is now being conducted with a factory and field force of 70 men, and production has reached 1 ton a day.

It is said that not more than 10 per cent of the far eastern rubber plantations exceeded a ton a day output. The Border Rubber Co.'s production thus exceeds that of 90 per cent of plantations. While water and other facilities can be extended to turn out 3 tons of rubber a day the present rate of output will be maintained continuously until such time as the price of plantation rubber declines below 40 cents a pound. At that figure, which affords an excellent return to growers of plantation rubber, American grown guayule can be produced at a fair profit.



(A) Plant of the Border Rubber Co., Marathon, Texas. (B) The Shrub is Hauled to the Factory on Motor Trucks. (C) Baled Guayule Ready for Extraction. (D) Samples of Marathon Shrub.

[1] "Guayule Cultivation in the United States." *The India Rubber World*. December, 1916, p. 133. Ibid., July, 1918, p. 579. February, 1919, p. 244. March, 1919, p. 289. April, 1919, p. 347. August, 1925, p. 652.

DURING THE FIRST HALF OF 1925 THE UNITED STATES IMPORTED, according to Rubber Association statistics, 181,787 tons of crude rubber, of which amount plantation rubber constituted 169,399 tons, Parás 8,089 tons, Africans 1,576 tons, and guayule 1,528 tons. During the corresponding months of 1924 the amount imported totaled 156,316 tons.

The United States Motor Vehicle Tire Industry

Tire and Tube Production—Rubber Consumption—Tires for Original Equipment and Replacement—Tires in Use—United States Exports of Tires

STATISTICS gathered and prepared by *The India Rubber World* from the reports of the United States Department of Commerce, the Rubber Association of America and the National Automobile Chamber of Commerce show the notable advance of tire production in the United States during 1924, when new peak records were made.

As in the past it is evident that the continued growth of our tire industry is due to the enormous and ever increasing use of motor vehicles for both business and pleasure, as indicated by the rapidly advancing motor vehicle registration in recent years and the fact that only a little more than 1½ per cent of the United States tire product is being exported. The United States consumes practically all the tires it makes.

United States Motor Vehicle Registration

The registration of motor vehicles in the United States during recent years has been as follows:

Year	Passenger Cars	Motor Trucks	Totals	Gain Number	Gain Percentage
1914	1,666,984	44,355	1,711,339	453,277	36
1915	2,372,696	72,968	2,445,664	734,325	43
1916	3,394,314	118,682	3,512,996	1,067,332	44
1917	4,792,205	191,135	4,983,340	1,470,344	42
1918	5,852,726	293,891	6,146,617	1,163,277	23
1919	6,771,074	794,372	7,565,446	1,418,829	23
1920	8,225,859	*1,006,082	9,231,941	1,666,295	22
1921	9,346,195	*1,118,520	10,463,295	1,231,354	13
1922	10,664,128	*1,375,725	12,238,375	1,775,080	17
1923	13,479,608	*1,612,569	15,092,177	2,853,802	23
1924	15,460,649	*2,131,332	17,591,981	2,499,804	17

*Motor trucks and commercial cars.

New York leads the states with a registration of 1,412,879. California follows with 1,319,394; Ohio is a close third with 1,241,600; while Pennsylvania has 1,228,587, and Illinois, 1,119,236. They are the "big five" with over a million cars each. Their 6,321,696 motor vehicles are over one-third of the total registration of the whole country, and nearly double the combined registration of the world exclusive of the United States, and which totals 3,672,771, a gain of over 25 per cent over 1923. California has the largest gross gain, 219,111, and Louisiana the largest percentage of gain, 30.3.

Of the entire world registration of passenger cars and trucks, numbering 21,264,752, 83 per cent are in the United States. In other words, there are nearly 5 times as many cars in operation in the United States as in all the rest of the world.

Tire and Tube Production

The United States tire and inner tube production in recent years actual and estimated, is shown in the tabulation below.

It will be seen that total United States tire production in 1924 amounted to 52,542,912 motor vehicle tires of all kinds, as compared with 46,168,112 tires in 1923 and 41,979,656 tires in 1922, and representing a gain of over 13¾ per cent in 1924, as compared with nearly 10 per cent in 1923.

Of the 51,633,588 pneumatic tire casings produced last year, 30,398,413 were cords and 15,319,078 were fabrics, leaving a balance of 5,916,097 to be credited as balloons. No balloon tire statistics were compiled by the Rubber Association of America prior to March, 1924, but during the last ten months of the year 5,904,098 balloon tire casings and 5,073,098 balloon tire inner tubes were manufactured.

It will be noted that only 909,324 solid and cushion tires were produced in 1924, against 922,864 in 1923, a decrease of nearly 1½ per cent, indicating the increasing use of large pneumatics for trucks. Solid and cushion tires now represent only about 1¾ per cent of the United States tire industry.

The year 1924 marked a considerable advance in pneumatic tire production, the increase in casings having been over 14 per cent and in tubes over 17 per cent, as compared with 11 and 12 per cent respectively in 1923.

In 1917, the last year prior to government curtailment of tire manufacture, production increased to nearly three times the output for 1914. Although production in 1918 was curtailed over 16 per cent of the 1917 casing output and over 14 per cent of the tube output, the 1919 production showed an increase above the 1917 record of over 27 per cent in casings and over 50 per cent in tubes. In 1920, owing to the general business depression, casing production decreased over 4½ per cent and tube production over 5½ per cent, while the following year casing production fell off nearly 13½ per cent more, but tube production increased over 3 per cent. During 1922 casing and tube production jumped respectively 40 to 41 per cent, establishing new peak records completely eclipsing those of 1919.

Crude Rubber Consumption for Tires

In 1924 the United States crude rubber consumption for tire manufacture, shown by the accompanying table, represented an increase of nearly 14 per cent above that of 1923, as compared with a 6 per cent gain the previous year and a 65 per cent gain in 1922 following the slump of 1921. The amount used was about 6⅓ times the 1914 consumption for this purpose, as compared with about 5½ times the 1914 consumption in 1923. In other words, over 85 per cent of the total crude rubber imports into the United States and over 83 per cent of the rubber consumed for all purposes in this country in 1924 was used for tire manufacture, as compared with 71 and 80 per cent respectively in 1923 and 78 and 80 per cent respectively in 1922. Put another way this means that over 5 times as much rubber is being used in the manufacture of tires and tire products as for all other rubber products. In 1921, 79½ per cent of the total United States crude rubber imports was used for tire manufacture; in 1920, 65 per cent; in 1919, 68 per cent; in 1917, 75 per cent, and in the fiscal year 1913, 58 per cent.

For the manufacture of the tires and inner tubes mentioned above the consumption of crude rubber was as follows:

	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
Pneumatic casings	*12,840,000	†18,500,000	†25,850,000	21,600,000	33,000,000	31,500,000	27,297,919	40,930,852	45,245,248	51,633,588
Inner tubes	.....	†16,785,000	†23,256,000	*20,000,000	*35,000,000	*33,000,000	32,082,000	50,847,912	60,170,777	70,705,440
Solid and cushion tires	.....	.....	.....	.....	.....	.....	.....	1,048,804	922,864	909,324

*Estimated. †Under 6 inches.

Crude Rubber Consumed in Tire Products and Sales Value of Shipments

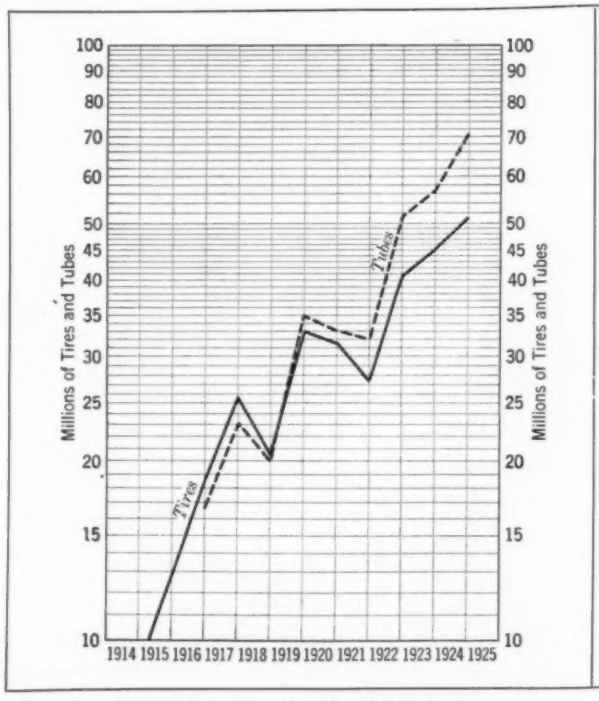
Tires and Tire Sundries	1924 Long Tons	1924 *Value	1923 Long Tons	1923 *Value	1922 Long Tons	1922 *Value
Automobile and motor truck pneumatic casings	182,308	$467,361	157,523	$439,803	146,318	$423,271
Automobile and motor truck pneumatic tubes	49,632	83,408	40,892	70,960	37,820	62,307
Motorcycle tires (casings and tubes)	359	1,389	394	1,540	428	1,582
Bicycle tires (single tubes, casings and tubes)	677	3,255	1,210	4,309	898	3,533
All other pneumatic casings and tubes not otherwise specified	14	335	18	129	529	2,258
Solid tires for motor vehicles	15,447	27,672	18,305	29,630	18,570	27,877
All other solid tires	317	516	302	775	352	1,027
Tire sundries and repair materials	2,908	14,480	2,308	11,317	2,288	10,338
Totals—tires and tire sundries	251,662	$598,416	220,952	$558,463	207,203	$532,193
Average number of manufacturers reporting, representing 90 per cent of the industry	218		243		240	

*000 omitted.

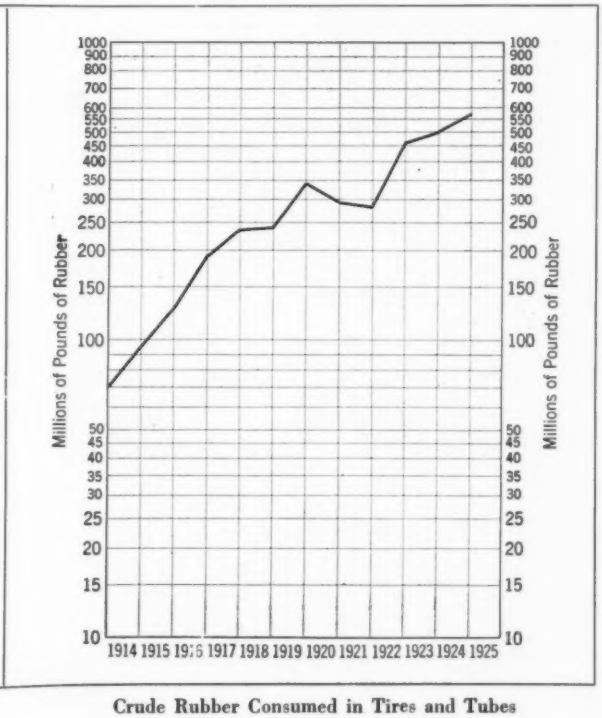
Year	Passenger Cars	Motor Trucks	Totals
1913	461,500	23,500	485,000
1914	543,679	25,375	569,054
1915	818,618	74,000	892,618
1916	1,525,578	92,130	1,617,708
1917	1,740,792	128,157	1,868,949
1918	926,388	227,250	1,153,638
1919	1,657,652	316,364	1,974,016
1920	1,883,158	322,039	2,205,197
1921	1,514,000	147,550	1,661,550
1922	2,406,396	252,668	2,659,064
1923	3,694,237	392,760	4,086,997
1924	3,243,285	374,317	3,617,602

Tire production for original equipment of newly manufactured motor vehicles in 1924 totaled 14,470,408 casings and inner tubes, or nearly 11½ per cent less than in 1923, but over 32 per cent more than in 1922, the 1921 demand having been 24 per cent less than in 1920. It is seen, therefore, that while 1,940,000 tires sufficed for original equipment in 1913, the 14,470,408 tires required last year represented an increase to nearly 7½ times the 1913 requirements, as compared with 8½ times the 1913 requirements in 1923.

Truck tire production for original equipment showed continuous growth during and since the war period, until in 1920 it had become 1,288,156, or over 13½ times the 1913 demand. In 1921 the business slump forced it down to 590,200, a drop of 54 per cent, but for 1922 the demand advanced to 1,010,672, an advance of



Pneumatic Tire and Tube Production



Crude Rubber Consumed in Tires and Tubes

It will also be seen from these figures, allowing for the fact that they represent 90 per cent of the industry, that the total wholesale value of all sales shipments of rubber products manufactured in the United States during 1924 amounted to about $992,519,000, of which $664,906,000 represented tire products and $327,612,000 represented all other rubber products. In other words, tire products comprised nearly 67 per cent of the wholesale value of all rubber manufactures.

Tire Demand for Original Equipment

The accompanying statistics of motor vehicle production in the United States indicate the increasing number of tires, mostly pneumatics, required annually for original equipment.

over 70 per cent, and in 1923 reached 1,570,864, a further advance of over 55 per cent. In 1924, however, the demand dropped to 1,497,268, a decrease of nearly 4¾ per cent.

The 1925 Tire Demand for Original Equipment

As to the 1925 production of motor vehicles and tires for original equipment, estimates vary as usual. It now appears likely, however, that the total 1925 production will be about 3,750,000 cars, of which some 3,330,000 will be passenger cars and the balance of 420,000 will be trucks, buses and other commercial cars, requiring 15,000,000 tires for original equipment, plus 3 per cent for those cars equipped with spares, in accordance with the estimate of the Rubber Association of America, or a total of 15,450,-

000 tires. Of these some 13,719,600 will be for passenger cars and some 1,730,400 will be truck tires.

The 1925 Replacement Tire Demand

The replacement tire demand provides the bulk of the United States tire production, but so many factors are involved that it is more difficult to forecast than the demand for original equipment. Of the 17,591,981 motor vehicles registered during 1924, past records show that about one-seventh, or 2,513,140 motor vehicles, will go out of use during the present year, leaving 15,078,841 motor vehicles which will require new tires this year to replace those which have worn out.

During the past four years the replacement demand has averaged about 2¾ tires per car each year although it was only about 2.3 last year. This ratio for any year, say 1924, is found by adding to the total number of tires carried over from the previous year (4,507,000) the total production of tires for the current year (52,542,912) and subtracting exports (1,250,000) and stocks on hand at the end of the current year (5,752,000), thus obtaining the actual consumption for the year (50,047,912). From this result is subtracted the estimated number of tires required for original equipment (15,450,000), found by multiplying the number of cars by four and adding 3 per cent of this total for new cars equipped with spares. The remainder (34,597,912) represents the number of tires actually used for replacement, and when divided by the number of registered cars in use for the full year (15,078,841) (total registration less one-seventh for cars going out of use) gives a close approximation of the average number of tires replaced per car per year (2.3).

On the basis of 2¾ tires per car the 15,078,841 cars which will be in use during the entire year 1925 will need 41,466,812 tires for replacement of old tires worn out. This is over five times the 1914 demand for replacements which amounted to only 8,136,685 tires on the basis of five fabric tires per car annually, it being reliably estimated that 84,002 motor vehicles were scrapped that year. With the car manufacturers' demand for original equipment estimated at 15,450,000 tires, a domestic demand totaling 56,916,812 tires is seen. To this may be added probable exports amounting to 1,300,000 tires, as it is unlikely that the foreign demand for United States tires this year will fall short of the average of the past three years. Thus the United States has a total demand for 1925 amounting to 58,216,812 tires. This is 6,583,224 more than last year's production.

The 1925 Inner Tube Demand

During the past five years the ratio of inner tube production to pneumatic casing production has shown a fairly steadily increasing ratio. For 1920 it was 1.04; for 1921, 1.17; 1922, 1.24; 1923, 1.33; 1924, 1.37. It seems reasonable to assume that this growth may continue and that 1.4 inner tubes to each pneumatic casing will be a conservative estimate for 1925 production. It has been estimated that the total United States tire demand this year amounts to 58,216,812. From this should be deducted some 900,000 solid and cushion tires likely to be manufactured this year. Applying the ratio of 1.4 to the balance of 57,316,812 indicates an inner tube demand of 80,243,537.

Tires in Use in the United States

Of the 17,591,981 motor vehicles registered in the United States during 1924, 2,131,332 were trucks and commercial cars, so that about 7¼ times as many pneumatic tires under six inches as truck tires were in use last year, the number of each sort, exclusive of spares, being approximately 61,842,596 pneumatics under six inches and 8,525,328 truck tires. One additional tire per car would be a conservative estimate for spares, making the totals 77,303,245 pneumatics under six inches and 10,656,660 truck tires, many of the latter also pneumatics, or a grand total of 87,959,905 tires in use in the United States last year.

On the basis of 10 pounds of rubber average per tire, or 50 pounds of rubber per car for regular tire equipment and one spare, a total of 879,599,050 pounds of rubber was consumed in manufacturing the tire casings in use in the United States last year, an amount equal to 19½ per cent more than the total crude rubber imports of the United States for the calendar year 1924, which totaled 735,980,070 pounds. On the same basis, only 183,638,550 pounds of rubber were consumed in manufacturing the tire casings in use in the entire world exclusive of the United States, an amount only 40 per cent of the United States consumption for the same purpose.

United States Tire Exports

The value of total tire exports to all countries has remained practically constant for the past three years, as shown by the following statistics compiled by the Bureau of Foreign and Domestic Commerce. In 1924 it advanced to $19,784,651, as compared with $19,409,712 in 1923, but did not quite reach the $19,898,412 total of 1922. Although the 1924 total represents a gain of nearly 2 per cent in value, as compared with a loss of nearly 2½ per cent the preceding year, it represents only about 56⅓ per cent of the $35,082,327 total for the record year 1920. Of the $19,784,651 total for 1924, $17,763,527 represented casings and $2,021,124 represented inner tubes. Gains were recorded in all the grand divisions except Europe, Oceania and Africa, which sustained losses.

UNITED STATES TIRE EXPORTS

Exported to	1916*	1917*	1918*	1919†	1920†	1921†	1922†	1923†	1924†
Europe	$10,992,184	$3,480,114	$1,460,518	$11,907,480	$4,124,210	$5,895,215	$7,614,159	$7,151,716	$6,526,336
North America	2,184,874	3,186,265	4,474,713	5,188,317	9,346,968	4,632,588	4,608,248	3,680,780	4,198,278
South America	1,050,398	2,596,939	3,432,181	4,986,024	7,391,010	1,785,363	2,863,701	2,738,864	3,315,996
Asia	477,895	810,300	1,194,551	2,970,464	5,081,831	1,524,811	1,988,747	2,501,025	2,860,027
Oceania	2,896,401	1,832,244	2,662,422	3,177,431	6,218,151	1,565,934	1,703,762	2,456,926	2,208,706
Africa	334,475	424,342	753,286	694,943	2,920,157	550,604	1,119,795	880,401	675,308
	$17,936,227	$12,330,201	$13,977,671	$28,924,659	$35,082,327	$15,954,515	$19,898,412	$19,409,712	$19,784,651

*Fiscal year ended June 30. †Calendar year.

Total Estimated 1925 Tire and Tube Demand

Total estimated 1925 tire demand for United States consumption is found by adding 14,713,632 tires—the estimated number required for original equipment of United States cars, less the 736,368 tires for equipping the estimated exports of 178,730 motor vehicles—to 41,466,812 tires—the estimated number required for replacements, not including estimated United States exports—the sum being 56,180,444 tires.

Similar figures for foreign demand are 4,538,720 tires for original equipment and 9,595,116 tires for replacement, making a total foreign demand for 14,133,836 tires.

The United States and foreign totals combine to indicate a grand total world demand for 70,314,280 tires in 1925.

Combining the United States and foreign totals of inner tube demand—78,423,537 tubes for United States consumption, not including estimated exports, and 19,787,370 tubes for foreign consumption—indicates a grand total world demand for 98,359,992 inner tubes.

Laying Rubber Floor Tiling

Conditions and Requirements—Importance of a Dry, Smooth, Level Base—Sub-Flooring Specifications—Moisture Tests—Paper and Cloth Under-Flooring—Floor Design and Color Layout—Maintenance

In common with many of the finer building materials, particularly those having decorative qualities, rubber floor tiling calls for proper installation. In the hands of those who understand the use of this material, however, the laying of rubber floors is not a complicated operation, but one which can be carried out quickly and perfectly under correct laying conditions. How rubber floor tiling is laid by one of the leading concerns in the business is told in "Period Adaptations for Modern Floors," prepared by the service staff of *The Architectural Forum* for the United States Rubber Co., and which forms the basis of this article.

Floor Design and Color Layout

Rubber tile floors are laid by the manufacturers of the rubber tiling, who maintain traveling crews of experienced floor layers. This insures perfect cutting, matching and fitting. Every flooring job is first laid out through plans prepared in the drafting room. This layout follows the suggestions of the architect, or if desired an additional service is provided to assist in the establishment of the floor design and the selection of color. Extensive experience has made it possible to render valuable suggestions in this respect, and architects are invited to send in plans of rooms where floor recommendations are desired. After the floor has been carefully planned, the layout is submitted to the architect, owner or contractor for approval. Blue prints of the approved layout are then given to the floor layers, who are trained to follow accurately all instructions indicated.

Floor Laying Should Come Last

The laying of rubber floor tiling is accomplished with speed and unusually little disturbance either during the finishing stages of a new building or in replacement jobs. It is always desirable that the installation of these floors should be the last operation on any new construction or remodeling project. Flooring of this type has a beautiful, substantial finish which cannot be marred by any ordinary usage, but naturally may be abused by painters, carpenters, plasterers or other workmen. If the flooring crew can be last on the job and have an uninterrupted right of way, any size installation can be carried out with surprising rapidity and highly satisfactory results in both quality and appearance.

Sub-Flooring Requirements

The most important factors affecting the successful laying of rubber floor tiling are the sub-floor requirements. The base upon which rubber tiling is to be installed must be smooth, dry and level. If the base is properly prepared there can be no question about the permanent success of the installation. The following simple specifications cover briefly these sub-floor conditions and requirements, and architects and contractors should insist that they be followed.

United States Rubber Co.

Laying Rubber Flooring in the New York Federal Bank

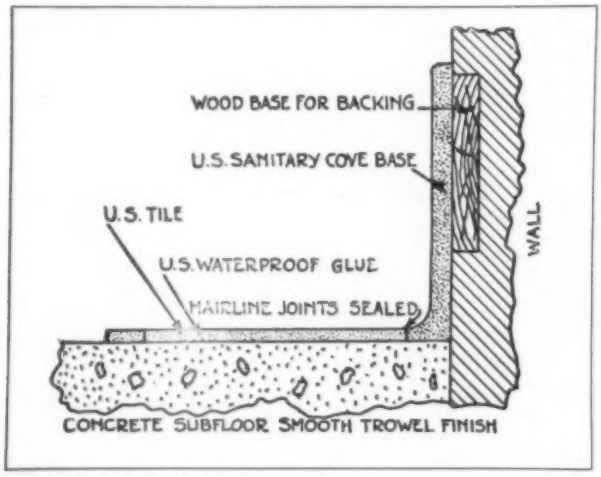
Sub-Flooring Specifications

Concrete. The concrete sub-floor shall have a top layer 1½ inches thick, composed of one part Portland cement and three

parts clean screened sand, troweled to a smooth finish, free from all waves and irregularities. This top layer shall be finished below the required floor level the thickness of the rubber tiling specified. All lines struck upon the surface shall be filled in before laying the tile. All concrete shall be absolutely dry, clean and free from foreign material before installation of flooring. Frozen concrete shall not be considered a satisfactory sub-floor unless its scale surface is removed and it is refinished with at least 1½ inches of new top layer, as specified above.

WOOD. The wood sub-floor shall be comb grain, kiln dried hard wood, laid in tongue and groove flooring not more than 3 inches wide, tightly driven in and blind nailed over centers not exceeding 16 inches. All irregularities of surface shall be planed down to present a smooth face.

COVE BASE. Where cove base is to be installed with rubber floor tiling on concrete floors, there shall be a solid wall backing rising



United States Rubber Co.

Section of Floor and Wall Showing Sanitary Cove Base Installation

at a 90 degree angle with the floor. The juncture of the concrete floor and wall must be absolutely even with no signs of raggedness. Furring strips shall be placed to come ¼-inch below the top of the cove base to be installed.

Importance of a Dry Sub-Floor

The sub-floor must be dry. No flooring, regardless of its composition, can be installed for permanent satisfaction upon a sub-floor which is damp or which may become damp due to no cellar beneath or to its location on the ground, in the basement or subject to an exterior grade.

Rubber floor tiling is set in a strong binding glue which is specially made for this purpose and is as near waterproof as such a binding can possibly be. At the same time no reputable floor manufacturer will undertake to install flooring upon a sub-floor where trouble might possibly arise due to the presence of too much moisture. In a case of this kind there is danger of loosening, which never occurs if the sub-flooring conditions are right.

Concrete Floor Moisture Tests

When installing rubber tile floors in recently completed buildings, the manufacturer is often asked to rush the work to completion before the concrete base is thoroughly dried out. When this condition is known the installation is refused, because experience has shown that it is not sound practice to lay a floor while the concrete sub-floor is still drying. Architects and contractors will find that strict insistence on a moisture test will insure the permanency of rubber floor installations. This moisture test can be made in a simple way. A hot flatiron can be placed on the cement floor for five minutes. When the iron is lifted any moisture in the sub-floor will be evident where the heat has been applied. Another test is to place a square yard of roofing paper upon the floor for 24 hours. When removed, the spot underneath the paper will reveal moisture if any exists. A piece of glass about 6 inches square placed upon a ridge of putty ¼-inch high so as to shut off the air tightly from the glue will draw the dampness to the surface if it is there.

Smooth, Level Surface Requisite

The base upon which rubber floor tiling is laid must be thoroughly smooth because any unevenness or roughness in the sub-floor will in time be reflected by unevenness in the surface of the rubber. A poorly troweled concrete floor, for instance, may ultimately ruin the appearance of a beautiful decorative rubber floor. A warped or uneven wood floor used as a base may have the same result.

The sub-floor must present a level, even plane surface for the same reason that it must be smooth. Rubber floor tiling is accurately and uniformly gauged to thickness in the manufacturing process, and the contour of a sub-floor will naturally be reflected in the contour of the finished floor. Consequently, the evenness of the base surface is an important factor in the good appearance of the finished floor.

Paper and Cloth Under-Flooring

Occasionally it is found expedient to overcome a bad surface condition by stretching over the floor a layer of felt paper or of cloth. This is done most frequently over wood floors, in order to eliminate the possibility of joints opening due to expansion or contraction of the wood. It is an interesting fact that such cracks in wood floorings do not occur evenly. Very often several of the floor boards will move in conjunction, accumulating a multiple movement which is expressed in the form of a wide opening or a bad ridge at various points in the floor. The use of a surfacing of felt paper is sometimes employed over cement floors to take up slight irregularities in the surface or for the purpose of slightly raising the level of the finished floor. Material used for this under-flooring purpose is determined by conditions on the job after practical observation.

Maintenance

One of the important advantages of rubber floor tiling is the ease with which it can be kept clean and attractive in appearance. There is no maintenance cost; no waxing or oiling is either necessary or advisable. Proper washing is the only care required, but this operation should be carried out correctly and using the right materials. Proper washing may be by dry mopping in sheltered areas such as living rooms, dining rooms or sun porches in the home. It may be by damp mopping in the corridors of the hospital or hotel, in private offices and other spaces where dirt from outside is not heavily tracked in. In areas of heavy foot traffic, where much dirt is tracked over the floors during the day, it is advisable to use a cleaning compound in the water used for wet mopping. Cleaning compounds, however, are dangerous for any type of floor and should be selected with great care. Rubber floor manufacturers specify approved materials suitable for cleaning their products.

PHILADELPHIA SESQUICENTENNIAL EXPOSITION

In commemoration of the 150th anniversary of the signing of the Delaration of Independence, a Sesquicentennial International Exposition will be held June 1 to December 1, 1926, in the city of Philadelphia, Pennsylvania. President Coolidge, through the Department of State, has invited the nations of the earth to participate, and every effort will be made to render the Exposition international in the broadest sense. Those desiring information regarding this important historical and industrial exposition should address The Sesquicentennial Exhibition Association, Independence Square, Philadelphia, Pennsylvania.

Elastic Webbing for Garters, Suspenders and Braces

ELASTIC webbing is a narrow-ware textile specialty. Narrow-wares include not only plain goods but many fancy and special fabrics in tapes, webbings, plain or fancy; typewriter ribbons; bandings; beltings; bindings; strappings; elastic webbings, surgical webbings, etc. The domestic production of elastic webbing in 1923 is reported as $25,774,024. This is manufactured chiefly into garters, suspenders and braces. The elastic element is the highest quality rubber containing only sufficient sulphur to effect vulcanization which is accomplished by the water cure under close control.

The weaving of rubber elastic threads with other materials dates from about 1840. The American industry was started about 1860, with English looms installed at Easthampton, Massachusetts, for the manufacture of shoe goring. Originally the rubber thread required was imported from England. Later its manufacture was begun at Easthampton, and later by other plants in New England. For many years, until the invention of the rubber wound golf ball center, practically the only outlet for rubber thread was in the elastic fabric industry.

The ever-increasing demands of trade have led to specialization in the construction of the ordinary tape loom, and there are now many varieties, differing in design and capacity according to the classes and types of fabrics to be made. Those for the weaving of elastic webbings have facilities added for the accommodation and control of the rubber threads woven in with the warp yarns. Garter webbings up to 1½ inches wide are usually woven on looms with 36 spaces. Suspender webbings up to 2½ inches are woven on looms of 28 spaces. In the case of wider webbings, a still smaller number of spaces are used.

Attempts have been made to weave webbings on wide looms, the cloth being divided at intervals, according to the widths required, by gaps in the warp, binder threads being woven in at each edge. The strips were cut apart by knives properly placed in the loom. The product, however, was unsatisfactory, owing to the lack of finish and the imperfect edges.

Calendering an elastic substance between two separate, finely-woven cloths has been attempted, afterwards cutting the product into narrow strips of desired widths. This method was simple but gave unsatisfactory edges, and was not acceptable to the trade. The webbing business has settled down to weaving narrow elastic goods, plain and fancy, on special gang-looms. Some of these looms for the weaving of webbings used in suspenders and in certain types of garters are equipped with attachments for producing the necessary button holes during the process of weaving.

In weaving elastic webbings the proper manipulation of the rubber warp threads requires much skill and experience. Atmospheric conditions affect the weaving, and to secure the low humidity required it is sometimes necessary to use artificial heat, even in warm weather, in order to lower the relative humidity in the weaving rooms.

In making some braided elastic webbings intended for arm bands and garters of certain types, the elastic rubber strands are first put through a braiding machine. This method protects the rubber strand when woven into the finished fabric in the loom.

The yarns used vary in fineness and ply. The webs and cords, being subject to changing fashion, vary greatly in design, size and texture. Looms of both the straight shuttle and the circular shuttle are used.

In weaving elastic webbings the simplest method is that used in making garter webs and similar fabrics. These are generally made up on plain cam ribbon looms, some types of which can produce as many as 56 pieces at one time. The more common webbings are loom webs, lisles, and cables, all of which are of single-cloth construction.

The filling threads constitute the most conspicuous features, and the fabrics range in widths from one-fourth inch to 2 inches. Two cotton warps are usually employed, one of these, the binder, weaves 2 up and 2 down, while the other, called the filler warp, weaves with the rubber warp 1 up and 1 down. The selvage is formed by the filling pick passing around a stationary steel wire fastened in the loom at the edge of the warp. The end of this wire, over which the pick of the filling passes, tapers to a point and the picks slide from it as the web is carried forward in the process of weaving.

Lisle webs are also plain, but are made with high-grade, combed, gassed yarns for the filling, and are woven with 4 binder warp threads between the strands of rubber instead of 2 as in the loom web.

All bleaching and dyeing must necessarily be done in the yarns before weaving, as the webbing cannot be subjected to any boiling processes. Sulphur dyes are not suitable for yarns to be used in elastic webs on account of the effect of the sulphur on the rubber thread.

The cable web is the most popular type for men's garters. It shows the prominence of the 2 dent ribs and differs in appearance from the plain web. The French web, or railroad weave, an intermediate grade between the loom and lisle web, is also used.

Elastic webbings after leaving the loom are dashed with sizing materials containing starch, and calendered over steam-heated cylinders, under sufficient tension to finish the fabric with a smooth acceptable surface. The webbings in this condition go to the manufacturers of garters, suspenders, and braces, who depend entirely upon the domestic supply of these materials.

TESTING TIRE WEAR ON ROADS

Tests of the wear of tires on different types of highways have been recently made by the State College of Washington, D. C. Touring cars were run over macadam and concrete road surfaces at different speeds and at different air temperatures. The tires were carefully weighed before and after each run, as were the contents of the fuel tanks. Thus the amount of rubber worn off and the volume of fuel consumed on every run were determined.

The tests revealed that tire wear increased from about 0.40 pounds of rubber per 1,000 miles of travel at 15 miles an hour on macadam road to 0.52 pounds at 33 miles an hour, or about 30 per cent. Also that the rate of tire wear when the temperature was 90 degrees F. was almost four times that at 40 degrees. Tires would wear out approximately seventeen times faster on good macadam and fifty-six times faster on very poor macadam than on concrete.

The volume of the rubber worn off on the concrete roads during the tests was estimated at $0.98, while for the same length of good macadam the figure was $16.72. On very poor macadam, where many sharp pieces of stone projected, the value was $56.15. The conclusion reached at the close of the tests was that if a highway carries more than 62 cars a day the reduced costs in gasoline and tires alone make a concrete road actually cheaper for the user than a macadam pavement.

DURING THE FIRST HALF OF 1925 ENGLAND HAS IMPORTED American-made rubber belting to the value of $157,504; hose, $176,025; and packing, $27,767. Corresponding figures for the entire year 1922 were $32,289, $223,003, and $46,052.

What the Rubber Chemists Are Doing

The More Complete Evaluation of the Pigment Reenforcement of Rubber[1]

By William B. Wiegand

THE proof resilience measured, for example, as foot pounds of energy stored in one cubic inch of the unstressed sample, has attained wide acceptance as perhaps the most generally useful single criterion of the quality of vulcanized rubber. It is most conveniently measured as the area subtended on the strain axis by the stress-strain curve. As energy it comprises an intensity factor represented by load per square inch, and a capacity factor represented by extension between zero elongation and the elongation at rupture.

In the study of the physical properties of compounded rubber the proof resilience as defined above is seen to exhibit the properties of a single member of a series of mixings which may be regarded as a continual progression from the uncompounded base to the upper limit of pigmentation as fixed either by choice or by the absorptive capacity of the base. Since, however, the proof resilience varies continuously with the concentration of the pigment, we define as the *"A"* function, the integral of the proof resilience with respect to pigment concentration between any assigned limits. The *"A"* function comprises an intensity factor represented by the proof resilience, and a capacity factor.

If the values for proof resilience are erected in the usual manner as ordinates, and pigment concentrations as abscissas, the numerical value of the *"A"* function is represented by the area subtended on the abscissa by the proof resilience curve. It is

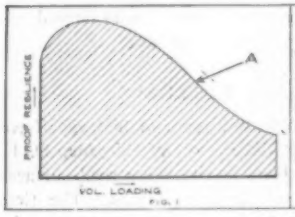


Fig. 1—"A" Function

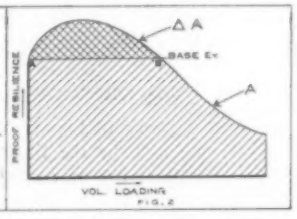


Fig. 2—"△A" Function of Pigmentation. "A" Function of Base Mixing

represented by the shaded area in Figure 1. *"A"* function with respect both to elongation and to volume loading, which has the dimensions of a volume, suggests a figure, the volume of which represents the space filled by all the stress-strain curves, from zero concentration to the upper limits of pigmentation and gives the complete stress-strain picture of the series of compounds under consideration.

Definition of "△A" Function

The *"A"* function includes not only the proof resilience due to pigmentation but also that of the base mixing. In order to assess the reenforcing power of any pigment it is therefore necessary to separate these two components.

In Figure 2 is therefore shown the area lying between the proof resilience curve of the base mixing as represented by the line *AB* and that part of the *"A"* function curve which lies above it. We define this area in terms of foot pounds as *"ΔA"* function. It represents the entire reenforcing properties of a pigment over the range of concentrations in which the physical properties of the base mix are enhanced.

[1] Presented before the Division of Rubber Chemistry at the 69th Meeting of the American Chemical Society, Baltimore, Maryland, April 5 to 10, 1925.

Relationships

Proof resilience yields tensile as the first derivative with respect to elongation, or tensile is represented by the rate of change of proof resilience with respect to elongation. *"A"* function likewise yields tensile as the second derivative with respect both to volume of pigmentation and to elongation, or tensile as the rate of change of *"A"* function with respect to both pigment loading and elongation. *"A"* function yields proof resilience as its first derivative with respect to volume, or proof resilience as represented by the rate of change of *"A"* function with respect to pigment loading.

Application to Published Data

To illustrate the application of *"A"* and *"ΔA"* functions to rubber compounding, certain of the published data upon the rubber stress-strain curve as influenced by pigmentation have been recalculated to exhibit proof resilience as a function of volume concentration and are represented graphically in Figure 3.

From the same data the *"ΔA"* function has been calculated for a few of the more commonly used compounding ingredients. This inclusive index to reenforcement traverses a very wide range of reenforcing values, running from approximately five thousand energy units to nil. Clearly the *"ΔA"* function, viewed as an index to reenforcement, reflects not only the performance of a pigment at its optimum concentration, but over its entire useful range. Carbon black takes first place because it maintains a high degree of reenforcing power *over a wide range of loading*. Magnesium carbonate, although yielding similarly high reenforcing power of optimum concentrations, suffers more rapid decay of reenforcement as the loading increases. Zinc oxide shows a low intensity of reenforcement over a fair range. China clay advances rapidly to a moderate peak, followed by rapid decay. Lithopone, whiting, and barytes show little or no intensity of reenforcement, compensated to some degree by a well-maintained capacity factor.

"△A" FUNCTION[2]

Pigment	Data by Wiegand	Data by Greider
Carbon black	4960	4745
Magnesium carbonate	....	2687
Zinc oxide	1813	1432
China clay	471	1904
Whiting	90	....
Lithopone	....	0
Barytes	45	....
Colloidal barium sulphate	....	0

[2] For the method of calculation of energies and *"ΔA"* Function, see paper "A Convenient Formula for the Calculation of Rubber Energy," by Sheppard, *The India Rubber World*, October 1, 1921. This method of calculation introduces an error relatively small to the experimental error in the determination of the stress-strain curves.

Significance in Pigment Research

These two aspects of pigment reenforcement—namely, its intensity at optimum concentration and the rate of advance and decline of reenforcement viewed as a function of concentration—are not without significance when considering the mechanism of pigment performance. In the first place, it seems clear that the normal decline in proof resilience of a mixing due to the dilution of the rubber phase can be arrested or reversed only by pigments which show either extreme fineness of subdivision or a very high degree of adhesion. With barytes, whiting, and lithopone this rate of addition of surface tension energy is not sufficient to offset the decline in energy due to dilution.

It will be observed that in the case of the reenforcing pigments proper there are marked differences in the trend of the proof resilience curve. Carbon black and zinc oxide are similar in showing a fairly smooth progression to the optimum point, and have similarly gradual declines. Magnesium carbonate and china

clay, on the other hand, exhibit a much narrower range of reenforcement.

These differences are of interest both on theoretical and practical grounds. Viewed as an index to particle structure, it is suggested that there may be a relation between the shape of the *"A"* function curve and the conformation of the individual particle. In a pigment the particles of which exhibit acicular, lamellar, or, in general, highly irregular surfaces, it can be readily understood that with increasing concentration there is at first added to the system a rapidly increasing superficial area of contact between pigment and rubber phase, more rapid in fact than in the case of a pigment the particles of which approximate spherical shape. (This follows from the obvious consideration that for a

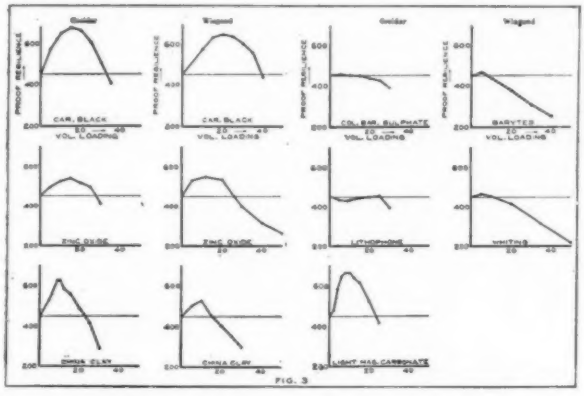


Fig. 3.—Proof Resilience of Certain Ingredients as a Function of Their Volume Concentration

given mass the spherical shape offers minimum surface.) Since there is unquestionably a parallelism between the development of superficial area and the reenforcement of the compound, such irregularly shaped pigments show a rapid advance to their optimum reenforcing power.

On the other hand, with increasing loading, pigments of the approximately spherical class exhibit striking advantages. As with small pigment concentrations it may be assumed that the pigment particles are disposed neither in strictly cubical nor in strictly tetrahedral piling, but in a piling that may be regarded as continuously intermediate between these limits, it is necessary to assume that as the concentration approaches the saturation point there will be a tendency, at least on the part of pigments of the spherical class, toward the tetrahedral disposition. Such a tendency will clearly preserve the superficial contact area between pigment and rubber phases and, which is also of cardinal importance, make for uniform interparticle distances and therefore uniform thicknesses of rubber within the interstices between the particles. This will assume a more uniform disposition of stress in the rubber phase and thus notably improve the tensile and resilient properties of the sample. The decay in proof resilience with very high percentages of such pigments may be regarded as due to the dilution effect upon the rubber plus the loss of surface consequent upon ultimate agglomeration.

In respect to pigments of the other class—namely, those the particles of which depart sensibly from sphericity—it seems clear that increased loadings impose much earlier agglomeration or contact of the individual particles, thus inhibiting the progress toward tetrahedral disposition, cutting down the rate of development of surface, and so yielding much earlier to the degrading effect of dilution.

Just as in vulcanization there is a contest between the setting-up effect of sulphur and the breaking-down effect of heat, so in the compounding of rubber we may picture a contest between the rate of addition of surface energy by the pigment phase and the decline in the resilience of the rubber phase through dilution.

From the practical side the trend of the *"A"* function curve is not without utility. There is now an increasingly important series of rubber compounds based upon the incorporation in very high percentages of, for example, carbon black, which exhibit high rigidity in combination with high extensibility and high tensile strength and resilience. These mixings have attained commercial importance in that they have extended the use of rubber into fields formerly preempted by the more rigid materials. High modulus of rigidity may be attained through the incorporation, in sufficiently high percentages, of practically any compounding ingredient. A very rigid compound may be produced, for example, by the addition of a very large percentage of whiting or barytes. Such products are practically useless, however, because the high rigidity has been attained at the expense of tensile strength and extensibility—i. e., proof resilience.

The prosecution of research in this interesting range of high modulus compounds is greatly facilitated by a close study of the trend of the *"A"* function curve. The most satisfactory results are clearly obtained by the choice of a pigment which unites as high as possible a value for the "ΔA" function, with a minimum rate of decline of the curve in the higher concentrations. At the present time properly made carbon black exhibits the most favorable combination of these properties.

Vulcanization Accelerators—I[1]

By G. S. Whitby and H. E. Simmons

McGILL UNIVERSITY, MONTREAL, CANADA, AND THE UNIVERSITY OF AKRON, AKRON, OHIO.

The following is a summary of the author's researches on vulcanization accelerators:

The accelerator piperidinium pentamethylenedithiocarbamate has been studied with regard to the influence of variation in the proportions of sulphur and accelerator, and the proportion and character of the zinc oxide used with the rubber. Zinc oxide of extremely fine particle size has a greater effect on the activity of the accelerator than has the ordinary zinc oxide, when the oxide is used in small proportions; but when used in large proportions the very fine oxide retards vulcanization if the proportion of sulphur present is only small.

The accelerating effect of piperidinium pentamethylenedithiocarbamate in the presence of zinc oxide is not due merely to the formation of the zinc salt; the salt-forming molecule of piperidine contributes considerably to the effect. The addition of a molecule of piperidine greatly enhances the accelerating effect of zinc phenylmethyldithiocarbamate and of di-*a*-thionaphthoyldisulphide. With all the ultra-accelerators studied there is evidence that the catalytically active agent is destroyed during vulcanization. One result of such destruction is that, with a given proportion of sulphur, a given proportion of accelerator cannot carry vulcanization beyond a certain point. Therefore with suitable proportions of accelerator and sulphur "flat curing" can always be obtained with accelerators powerful enough to bring about vulcanization at temperatures at which sulphur alone cannot. The accelerator di-*a*-thionaphthoyldisulphide has been closely studied in this connection.

Determination of Vulcanization Coefficient

The following is the standard method employed at the Imperial Institute, London, for the determination of the coefficient of vulcanization as given in the Appendix of Bulletin 39, May, 1925, The Rubber Research Scheme, Ceylon:

Two grams of the ground vulcanized rubber are extracted with acetone for 24 hours, digested with 75 cc. of 25 per cent

[1] From papers presented before the Division of Rubber Chemistry of the American Chemical Society at its 65th Meeting, New Haven, Connecticut, April 2 to 7, 1923, and its 67th Meeting, Washington, D. C., April 21 to 26, 1924. Received March 5, 1925.

alcoholic potash for 8 hours, and extracted with alcohol for 24 hours. The residue is carefully oxidized on a water bath in a Kjeldahl flask with 70 cc. of brominated nitric acid containing 2 grams of bromine and 2½ grams of potassium nitrate per liter. If the reaction is too vigorous the flask is cooled under the tap.

When oxidation is complete the solution is evaporated to dryness in a porcelain basin; 5 grams of sodium carbonate are then added with a little water and the whole is washed into a nickel dish, evaporated to dryness, and fused by means of a petrol blow lamp, the rate of fusion being controlled by adding slowly 5 grams of powdered potassium nitrate. The fused mass is dissolved in water, filtered, and 20 cc. of concentrated hydrochloric acid added. The sulphate is then precipitated by quickly adding to the boiling filtrate 30 cc. of 10 per cent barium chloride solution. After standing overnight the precipitate is treated in the usual way, the sulphate and the filter paper being incinerated together. A blank determination is made whenever fresh materials are used.

In the case of zinc oxide mixings, a larger quantity of the vulcanized rubber is taken, and previous to oxidation the extracted material is covered with ether and after half an hour 10 cc. of concentrated hydrochloric acid are added. The ether is distilled off on the following day, the residual rubber washed three times with hot water, and oxidation carried out as described above.

The vulcanization coefficient is the amount of sulphur found, calculated as a percentage of the rubber contained in the mixing.

Chemical Patents

The United States

PROCESS OF MAKING THIOUREAS. This consists in adding the vapor of carbon bisulphide to a primary aromatic amine maintained at a temperature between the boiling point of carbon bisulphide and the decomposing temperature of the product.—William J. Kelly and Claude H. Smith, assignors to The Goodyear Tire & Rubber Co., all of Akron, Ohio. United States patent No. 1,549,720.

RUBBERIZED FIBROUS COMPOSITION. The method comprises drying the fibers by heating in the presence of a liquid non-miscible with water, mixing the fibers with a solution of rubber, precipitating the mixture and removing the liquid phase.—Paul Beebe, assignor to The Goodyear Tire & Rubber Co., both of Akron. United States patent No. 1,549,729.

CRUDE RUBBER. The process consists in desiccating the latex to obtain substantially all its solid constituents, and heating the contituents to obtain a product dark colored throughout its mass.—Russell Hopkinson, Elmhurst, New York, assignor to General Rubber Co., New York. United States patent No. 1,550,319.

STABILIZED STYROL COMPOSITION AND PROCESS FOR MAKING IT. A process for combining styrol with an organic agent, quinone, adapted substantially to prevent polymerization.—Iwan Ostromislensky and Morris G. Shepard, New York, N. Y., assignors to The Naugatuck Chemical Co., Naugatuck, Connecticut. United States patent Nos. 1,550,323 and 1,550,324.

PROCESS OF TREATING LATEX. This comprises thickening and stabilizing the latex by adding an easily decomposable colloidal silicate in the presence of an alkali.—M. C. Teague, Elmhurst, New York, assignor to American Rubber Co., East Cambridge, Massachusetts. United States patent No. 1,550,466.

RUBBER COMPOSITION. This consists in mixing scrap and reclaimed rubber with sulphur, and adding uncured friction.—Louis E. Klugg, assignor to Rub-Tex Products Co., both of Indianapolis, Indiana. United States patent No. 1,550,968.

VULCANIZING RUBBER. A rubber compound containing a metallic oxide is subjected to the action of a solution such as naphtha, to which has been added carbon disulphide and an accelerator of Class "A," as described, the necessary sulphur and an accelerator of Class "B," as described, being added to the compound or solution as may be desired, and finally vulcanizing.—Thomas W. Miller, Ashland, Ohio. United States patent No. 1,551,042.

VULCANIZING RUBBER. This process comprises combining rubber with sulphur, lead dithiobenzoate, and an oxide of lead, and vulcanizing the rubber.—S. M. Cadwell, Leonia, New Jersey, assignor to The Naugatuck Chemical Co., Naugatuck, Connecticut. United States patent No. 1,552,820.

FORMING AND APPLYING RUBBER DESIGNS. A process which comprises forming a film of depolymerized rubber ink with raised portions, directly applying a backing thereto, and removing the raised portions of the film by stripping the backing.—T. V. Binmore, Long Island City, N. Y., assignor to The New York Belting & Packing Co., New York, N. Y. United States patent No. 1,552,907.

The United Kingdom

COMPOSITION CONTAINING RUBBER LATEX. Thickened and stabilized rubber latex compositions for extruding, spreading, and dipping purposes are obtained by adding to latex a non-protein agent adapted to thicken the aqueous phase and stabilize the latex without substantially modifying the colloidal condition of the rubber hydrocarbon.—American Rubber Co., Boston, Massachusetts, assignee of M. C. Teague, New York, N. Y. British patent No. 235,232.

ADHESIVE RUBBER COMPOSITIONS. Compositions containing rubber and ingredients which impart tackiness are prepared by mixing latex or other water suspension of rubber with an easily decomposable water solution compound of the other ingredient, and afterwards decomposing this compound and removing that portion rendering it soluble. For example, a shoe cement is made by mixing 100 parts of rubber as latex, 20 parts of ammonium resinate, 280 parts of added water, 24 parts of litharge, and 4.2 parts of sulphur.—American Rubber Co., Boston, Massachusetts, assignee of M. C. Teague, New York, N. Y. British patent No. 235,233.

DISTILLING RUBBER. Waste crude scrap or vulcanized rubber is heated in a still to a temperature not exceeding 350 degrees C. at a pressure not exceeding 2 atmospheres, until about half to three-quarters of the charge is vaporized. The distillate is condensed at about atmospheric pressure, yielding mainly crude dipentene, and a gas which is led to the furnace for heating the still, and the liquid residue, called "liquid rubber," is collected and used as a substitute for drying oils.—M. K. Bamber, Hyde Park Corner, Colombo, Ceylon. British patent No. 235,380.

GOLF BALLS. A composition for a golf ball cover comprises gutta percha or balata, raw rubber and a reinforcing colloid material such as bone glue, which is incorporated with the other materials. The composition may be made vulcanizable or non-vulcanizable.—A. Speedy, 17 Disraeli Road, Putney, and Spaulding Bros., Ltd., 317 High Holborn, both in London. British patent No. 235,719.

COLORING HOT WATER BOTTLES. An outer jacket is applied to hot water bottles by cementing upon it sheet rubber compounded with a suitable accelerator, sulphur, coloring matter, and fillers and vulcanizing the sheets by dry heat process.—North British Rubber Co., Ltd., Castle Mills, and W. G. Martin, Blackhall, both in Edinburgh. British patent No. 235,743.

MATERIAL FOR TREATING CUTTING BLOCKS. For giving the cutting surface an elastic or resilient property it is treated with rubber dissolved in linseed oil, and glue solution subsequently chrome treated.—E. Ganz, 74 Walkmühlstrasse, Wiesbaden, Germany. British patent No. 235,757.

TREATING RUBBER LATEX. Thickened stabilized latex for spreading, dipping, molding purposes is obtained by adding to latex a thickening agent having also a coagulative action and neutralizing this latter by means of an anti-coagulant.—American Rubber Co., Boston, Massachusetts, assignee of M. C. Teague, New York, N. Y. British patent No. 235,888.

INSULATING MATERIALS. Rubber insulation for submarine and other cables or conductors, after being applied is impregnated with paraffin wax to enable the pores at or near the outer surface to be filled without substantially affecting the mechanical properties or dimensions.—Western Electric Co., Ltd., Connaught House, Aldwych, London. British patent No. 236,026.

The Dominion of Canada

METHOD OF UNIFORMLY AND INTIMATELY MIXING MATERIALS WITH RUBBER LATEX. Comprises mixing rubber with other materials which consists in forming a suspension of such other materials, mixing the suspension with rubber latex and then depriving such mixture of substantially all of its water content.—Ernest Hopkinson, New York, N. Y. Canadian patent No. 253,192.

PROCESS OF MAKING ARTICLES OF VARIOUS SHAPES DIRECTLY FROM SOLUTIONS OR SUSPENSIONS OF RUBBER. The process for making thread, strips and similar articles comprises continuously passing a stream of latex through a nozzle into a coagulant, as acetic acid, coagulating the stream to form a solid rubber mass continuous with the stream, continuously drying the rubber mass, and maintaining the rubber under tension during its passage through the coagulant and its drying.—The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, assignee of Ernest Hopkinson, New York, N. Y., and Willis A. Gibbons, Little Neck, Long Island, N. Y. Canadian patent No. 253,290.

VULCANIZATION OF RUBBER. The process of vulcanizing rubber characterized by heating rubber with vulcanizing material, such as sulphur and a tolylguanidine.—Albert C. Burrage, Boston, Massachusetts, assignee of Albert C. Burrage, Jr., Ipswich, Massachusetts, Charles M. Dale and Harry I. Caswell, both of Portsmouth, New Hampshire, appointed trustees in bankruptcy of the Atlantic Dyestuff Co., assignee of Ralph V. Heuser, Elizabeth, New Jersey, all in the U. S. A. Canadian patent No. 252,665.

HEPTENE

Heptene is an accelerator of the aldehyde-amine reaction product type. It is powerful, safe to handle, stable and being a light oil, blends thoroughly with rubber. Due to the small amount required it is best used as a master batch with rubber. Zinc oxide is desirable to bring out the best value of the accelerator. Heptene is well adapted to tire carcass, auto tubes, wire insulation and hard rubber compounds. Although very powerful, it is one of the very safest accelerators on mills, calenders and tubers.

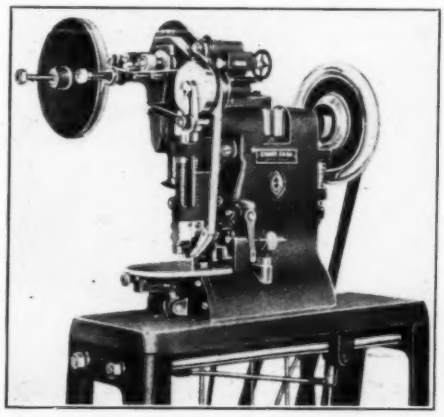
EXPORTS OF RUBBER COMPOUNDING INGREDIENTS

During the first six months of 1925 the United States exported 2,210,300 pounds of bone black and lamp black, value $137,600, and 20,665,600 pounds of carbon black, value $1,681,200, a total of 22,875,900 pounds, value $1,818,800. Corresponding totals for the first half of 1924 were: 21,078,600 pounds value $2,091,300. Exports of lithopone during the 1924 period included 1,135,000 pounds, value $64,700, as compared with those for the first half of 1925 of 1,310,400 pounds, value $69,000. Exports of zinc oxide have greatly increased during the six months' period of the present year, the amount reaching 9,665,200 pounds, value $680,600, as compared with 3,936,400 pounds, value $309,400, the corresponding estimates for 1924.

New Machines and Appliances

Attaching Leather Soles with Crude Rubber

EXPERIMENTS to find a reliable method for making crêpe rubber adhere to leather resulted in the discovery that by certain treatment of the two parts their absolute adhesion can be affected. The attachment is said to be so strong that it is impossible to pull apart the rubber from the leather without tearing the latter. The process is of special value in the shoe industry and bids fair to displace all other methods such as sewing, etc., heretofore employed for attaching leather parts in shoe making.

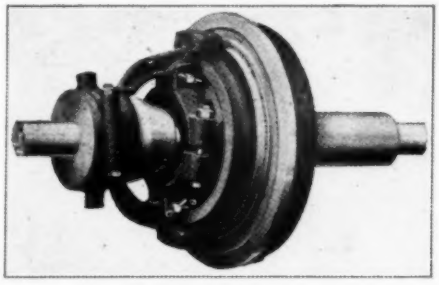


Machine for Uniting Crude Rubber to Leather

First quality latex crêpe is cut into strips three-eighths inch wide. The strip is frayed on the surface and the rubber then softened with strong solvent. The leather is prepared with fluted incisions corresponding in width and depth to the rubber strip. By means of the machine here pictured the softened frayed strip of rubber is applied to the prepared leather under heavy pressure by the action of two corrugated faced hammers, which wedge the rubber thoroughly into the incisions and effect a permanent union of the rubber and leather without vulcanization. A leather sole with rubber strip thus embedded is attached to the lasted upper, from which the grain only is removed, by heavy pressure in the levelling process machine. This method produces a water tight union of upper and sole, at the same time the porosity and ventilation are not impaired.—Ernst Enna, Copenhagen, Denmark.

A New Friction Clutch

The friction clutch here illustrated has been designed for medium and light duty. It can be applied to any machine or countershaft which requires a friction clutch. Its parts are few and in plain view and readily accessible requiring no special tools for adjustment or removal. The toggles are adjusted at the same time by means of a split ring nut. The free floating friction rings are of fiber or asbestos brake lining. These clutches are made up as sleeve clutches, cut-off couplings, or to be bolted to the arms of pulleys, sprockets, gears, sleeves, etc.—W. A. Jones Foundry & Machine Co., Chicago, Illinois.

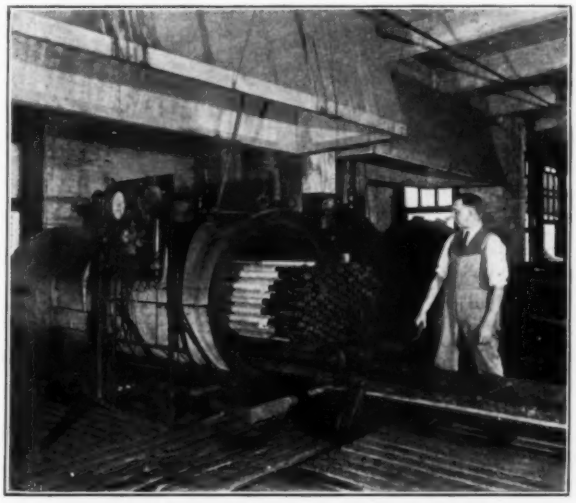


Lemley Model F Clutch

Quick-Operating Vulcanizer Door

An improved design of quick-acting, easily-operated vulcanizer door applied to an inner tube vulcanizer is herewith illustrated.

The door swings on the end of the hinge, being suspended at a point in its exact center. It is free to swing on this point as well as on the hinge bearings. This permits the door to move straight in and out of the locking ring and affords ease of operation. The locking ring is revolved on a collar fastened to the rim of the vulcanizer shell and is moved by a rack and pinion, and a hand lever. The locking ring has depressions on its inside circumference, into which fit the lugs on the circumference of the door. When the latter is closed these lugs enter the locking ring sufficiently to bring them slightly behind the projections on the ring. A light pull on the lever revolves the ring enough to bring the ring lugs over those on the door. The lugs being tapered, give a wedging action which thrusts the door tightly against the packing, making a safe steam tight joint.—Southwark Foundry & Machine Co., Philadelphia, Pennsylvania.



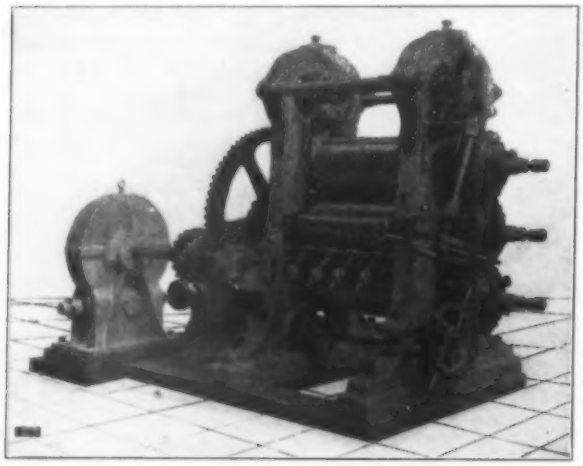
Southwark Horizontal Vulcanizer and Door

Worm Gear Calender Drive

Rubber sheet perfectly smooth and free of gear marks can best be secured by the use of a calender, motor driven through worm reduction gear. A three-roll calender of this sort is here pictured. The frames and motor are carried on a deep box-section bed plate.

The rolls are 16 by 30 inch with glands and connections for heating. The center roll is carried in gun metal steps in strong cast-iron blocks, keyed securely in fixed position on the frames. The top and bottom rolls are also carried in gun metal bushes in blocks working in vertical slides in the frames, each being adjusted independently by vertical screws driven by worm wheels from a cross shaft actuated by hand wheels placed conveniently to the operator. An arrangement is provided on both top and bottom worm shafts to disconnect one of the worms for adjusting for parallelism. The three rolls are geared together with equal speed, the center one being driven by a large machine cut double helical spur wheel with a pinion on a back shaft, one end of

which is carried in a special self-oiling bearing on a bracket bolted to one of the main frames. Its opposite end extends into a fully enclosed worm reduction box, and is fitted with a worm wheel with bronze rim driven by a hardened steel worm.



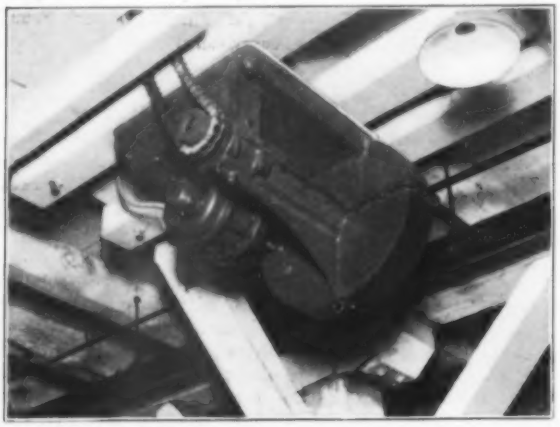
Robinson Sheet Calender

The bearings of both reduction gear and worm wheel shaft are double thrust ball type. The worm shaft is extended and fitted with a flexible coupling for connection with the motor shaft. The motor is direct current type, compound wound 30 B. H. P., normal speed 600 r.p.m.

Another feature of this calender is a small breast roll fitted opposite the middle roll over which the sheet passes. Adjustable circular knives for cutting the sheet into strips cut on the breast roll and not on the main roll.—Joseph Robinson & Co., Ltd., Manchester, England.

Gear Speed Reducer

The gear speed reducer here illustrated is made in single reductions only and designed for a maximum ratio of 14 to 1. It differs from other types in that it operates in inverted as well as upright positions. The gear centers are horizontal and the low-speed shaft is carried back by the side of the motor.



Falk Single Reduction Unit

The shaft is supported in a large and rigid bearing suitable for overhung drive from sprocket, pinion or pulley. It can be attached under floor joists and is adapted for driving small overhead line shafts. If desired the low-speed shaft is arranged to project at both ends so that the drive may be located in the middle of the line.

These reducers have herringbone gears, are small, compact, oil-tight and dust-proof, noiseless and free from heat and vibration. Under full load continuous service their efficiency is 97 per cent.—The Falk Corporation, Milwaukee, Wisconsin.

Leatheroid Boxes and Trucks

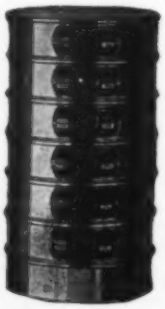
Leatheroid boxes and box trucks, typical picture of which is here shown, have proved very suitable in manufacturing plants, in none more so, perhaps, than in those producing rubber goods, where compositions, parts in process, small molded articles, scraps, cuttings, etc., are used. The compound box is built of leatheroid body; top of hard wood covered with steel; handles of steel "cut in." The box is riveted with solid smooth head rivets. Its edges and covers are reinforced while the bottom is supported with hard wood shoes faced with iron. The light, durable construction and ample taper adapt these boxes for handling material from compound department to mill room.

Leatheroid Compound Box

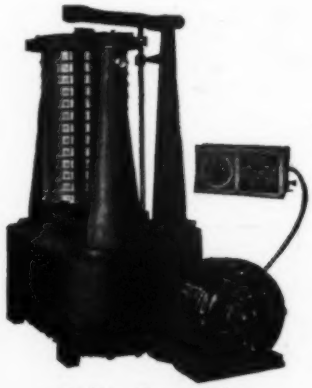
Steel clad and leatheroid box trucks are substantially reinforced and well adapted for the clean handling of uncured scrap and liners in calender and cutting rooms and for general movement of articles in bulk.—Rogers Fibre Co., 121 Beach street, Boston,

Laboratory Testing Sieves

Every compounder appreciates the practical use of a set of testing sieves for inspecting the fineness of compounding ingredients and their freedom from accidental impurities.



Testing Sieves



Ro-Tap Sieve Shaker

Such a set of sieves is here pictured for hand use. They are wired with standard screen testing wire cloth made with openings that increase and decrease in a fixed ratio. They are accurately made and are comparable one with another.

For mechanical operation these sieve sets are mounted in a Ro-Tap machine. This device is motor driven, with switch connection as illustrated. It reproduces the circular and tapping motion given sieves in hand sieving, but with uniform mechanical action, assuring identical results on repeated tests.—The W. S. Tyler Co., Cleveland, Ohio.

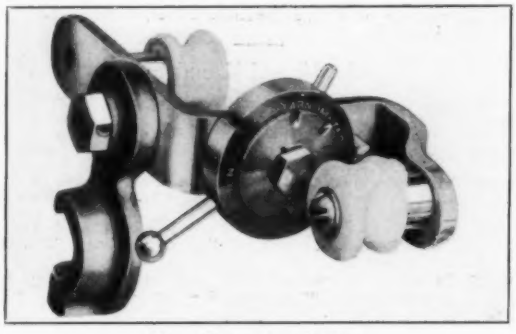
Bonney Rim Tool

A quick-acting, powerful tool for the shop and car, which is practical, simple, strong and efficient, will be welcomed by garage owners and motorists. There are no parts to wear out, and it is small and compact enough to fit into the tool box. Made of steel throughout, the body and jaws are drop-forged and the working parts and screws are hardened. By means of the set screws in the jaws the rim is held with a firm grip. One movement contracts the rim and holds it in a contracted position until ready to be replaced. The feature of this tool is the leverage exerted on the rim which it forces downward, then forward making the separation clean without jamming or burring the edges. Will contract any split rim including those for balloon tires. This tool is strongly packed and each box contains a heavy canvas bag in which the tool may be kept.—Bonney Forge & Tool Works, Allentown, Pennsylvania.

Yarnometer

In the manufacture of yarns for producing quality textiles for tires such as cords, cord fabric, and square woven fabric and other specification constructions it is essential that the yarns be continuously inspected by a sizing device. Such an instrument is here illustrated, and known as a "Yarnometer," is adapted to be attached to a yarn winding machine, one for each winding unit. Its function is to improve cotton, silk or worsted yarns by mechanically stopping imperfections.

The essential feature of the yarnometer is a disk slotted for the passage of different sizes of yarns. This disk is surrounded by a locking ring which can be turned to aline the sized slots



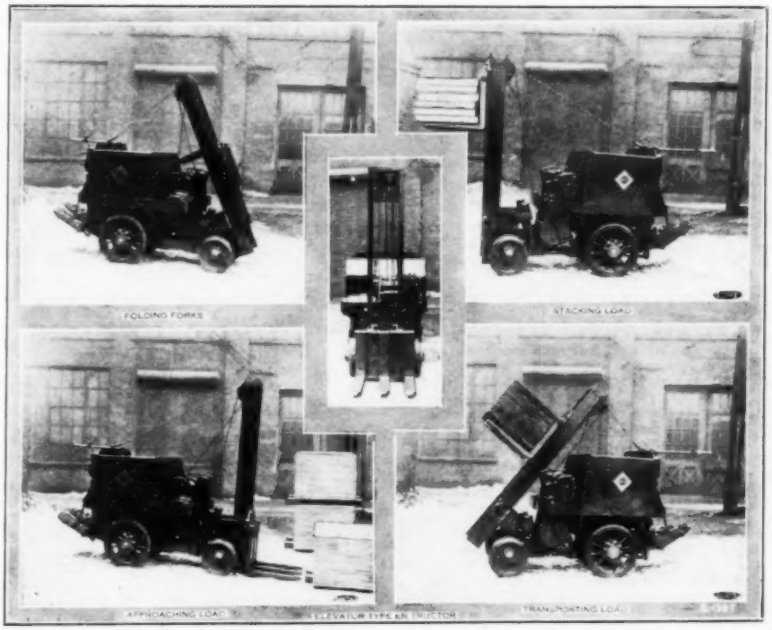
Yarn Inspecting Device

in the disk for the passage of a given size of yarn. In operation a given size yarn having been laid in the proper slot in the edge of the disk, the latter is placed in the locking ring which is then adjusted and partly revolved to locking position when the winding proceeds. The yarnometer automatically stops the winding unit whenever an oversize spot in the yarn attempts to pass the disk.

Much of the yarn used in tire fabric and tire cords is wound through a yarnometer to secure the detection of all imperfections. The same is true of the yarns used in making knit and woven fabrics employed in many other lines of rubber goods.—International Textile Devices, Inc. James Speed & Co., Agent, 80 Federal street, Boston, Massachusetts.

Rubber Factory Elevator Tructor

The latest form of electric truck for factory use is here illustrated in the various aspects of stacking material. The field for this truck has so broadened that it is now being offered for handling heavy goods in many rubber establishments as for example, bales of rubber, bags and barrels of compounding ingredients, rolls of fabric, molds, etc.



Electric Stacking Tructor

Referring to the group illustration it will be noted that the vertical uprights, as shown, can be tilted at 40 degrees, the object being to carry the load inclined so that it may be held safely during the travel of the tructor and will pile evenly when the destination is reached. The vertical and rocking motion of the forks is obtained by means of a double drum electric hoist. The upper drum cable pulls the vertical uprights toward the operator against the action of a pair of heavy springs. When the cable is fully paid out the uprights pitch forward slightly and throw the tips of the forks downward for insertion beneath the load.

This tructor will handle tire molds, rolls, and in case of materials of greater bulk and less weight than metal, will do it at greater outreaches than any other trucking equipment.—The Elwell-Parker Electric Co., Cleveland, Ohio.

Machinery Patents

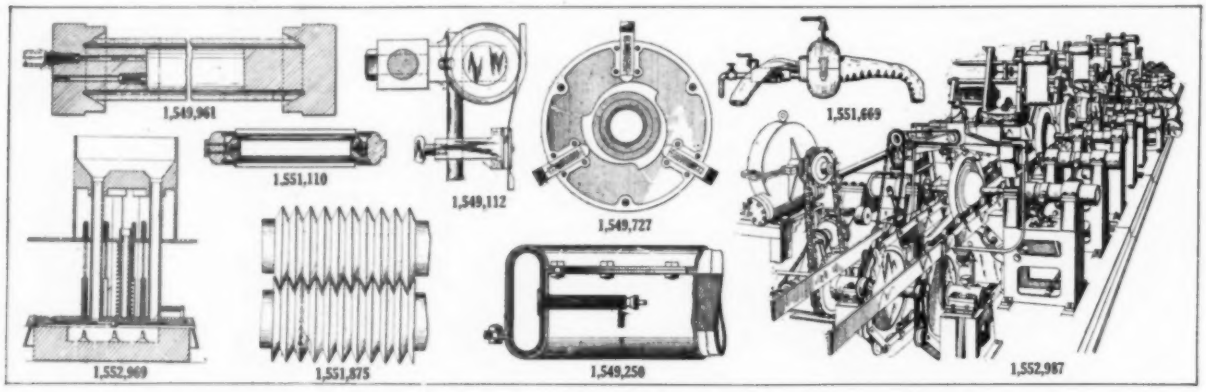
The United States

1,549,112 CHAFER-SETTING ATTACHMENT. This attachment for a tire building machine cooperates with the rotary core upon which the tires are built, sets the chafer strip in proper position upon the tire casing and rolls it down as the core revolves.—Frank H. Grove, Columbiana, Ohio.

1,549,250 MOLD FOR PNEUMATIC TUBES. This is a circular mold made from sheet metal in two parts, flanged for bolting together. The parts are each shaped to provide flat wall portions with one side edge bent to form curved end walls. When assembled the parts form a closed mold of oblong cross section.—John Gardner, Weehawken, New Jersey.

1,549,727 CHUCK FOR TIRE-MAKING MACHINE. This chuck provides a mounting for a tire core which is easily and quickly operated, and in which the means for holding the core is firmly locked so that it cannot become loosened under strain of applying the fabric on the core and allow the latter to slip.—Edward D. Putt, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,549,961 APPARATUS FOR VULCANIZING RUBBER TUBES. Clamp pieces or plugs are provided for use with straight tubular curing mandrels, and constructed to automatically pinch the ends of the wrapped rubber stock against the ends of the tube and seal the ends of the mandrel when the atmospheric pressure within the mandrel is reduced. The clamping plug has a valve for exhausting air from the mandrel, and another for live steam to enter the mandrel and effect vulcanization from the interior. A



plain clamp is used to close one end of the mandrel.—William W. Buckbee, Chicopee Falls, Massachusetts.

1,551,110 VULCANIZING APPARATUS FOR THE MANUFACTURE OF HIGH PRESSURE EXPANDED VULCANIZED RUBBER. Vulcanization of an article is effected by heating it expanded by gas in an autoclave. The heat is gradually increased with the gas pressure until it reaches the full vulcanizing temperature, usually about 305 degrees F.—Charles L. Marshall, London, England.

1,551,669 DEVICE FOR CURING INNER TUBE SPLICES. This device eliminates mismating the inlets and outlets in the mandrels of different splicers by the use of special adapter means.—Robert R. Jones, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,551,875 MILL FOR GRINDING RUBBER MATERIAL. This mill comprises a pair of intermeshing grinding rolls having their surfaces formed with parallel encircling ridges which are notched in the top portion. These rolls combine the effect of crushing action with a drawing in action, and the combination is more efficient in grinding vulcanized rubber scrap.—Pirl Ward Hall, Akron, Ohio.

1,552,969 WASHER PLACING MACHINE FOR RUBBER MOLDS. This machine is adapted to be placed over the mold upon the washer-pins of which the washers are set by registering slidable plates. The supply of washers is carried in a hopper from which they are discharged through tubes.—Robert T. Tucker, Roylston, Georgia.

1,552,987 TIRE BUILDING MACHINE. This is a single machine which will progressively construct a tire by a series of successive related steps and operations. First the various plies of fabric are superimposed on and formed about a core, after which the bead parts are applied, followed by the superimposed fabric plies. These are succeeded in turn by the chafing strip, breaker strip, gum cushion, tread and side walls completing the tire ready for vulcanization. The operations of the machine being continuous it follows that a number of tires may be constructed simultaneously in the machine.—William B. Harsel, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,549,177 Rubber molding apparatus. John F. Allen, assignor of one-third to J. A. Himrod, and one-third to Edward E. Allen, all of Erie, Pennsylvania.

1,551,025 Apparatus for vulcanizing a hollow article in a fluid. Christian Hamilton Gray, London, England.

1,551,264 Method of making a fluid pressure containing tube. John F. Palmer, St. Joseph, Michigan.

1,553,154 Apparatus and method for molding hollow articles, such as hollow cushion tires. John R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,553,243 Tile press. William Henry Ivens, Trenton, New Jersey.

The Dominion of Canada

253,294 Machine for folding bags used in the manufacture of tires. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Adrian Oren Abbott, Jr., Detroit, Michigan, U. S. A.

253,296 Machine for stripping footwear articles from trees, etc., The Canadian Consolidated Rubber Co., Limited, assignee of Chester Joseph Randall, Woonsocket, Rhode Island, and of Charles Wurtemberg, Union City, Connecticut, both in U. S. A.

253,297 Apparatus for removing vulcanizing bags from casings, etc. The Canadian Consolidated Rubber Co., Montreal, Quebec, Canada, assignee of George Kennedy McNeil, Detroit, Michigan, U. S. A.

253,298 Differential cure vulcanizing apparatus. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Paul Lenson Hunt, Hamden, Connecticut, U. S. A.

253,304 Tire building apparatus. The Fisk Rubber Co., Chicopee Falls, assignee of Thomas Midgley Hampden, both in Massachusetts, U. S. A.

The United Kingdom

235,423 Machine for automatically loading a rubber heel blank with nail, etc. washers. E. C. R. Marks, 57 Lincoln's Inn Fields, London.—Lawson-Whitehead Co., 35 Hartford street, Boston, U. S. A.

235,859 Press for molding india rubber hollow ware. J. F. Allen, 502 West 5th street, Erie, Pennsylvania, U. S. A.

236,503 Machines, including a toe support formed from a block of soft rubber, for performing pressing operations on soles, etc. British United Machinery Co., Ltd., Union Works, Belgrave, Leicester.—United Shoe Machinery Corporation, 205 Lincoln street, Boston, U. S. A.

Germany

418,047 (July 6, 1924). Apparatus for vulcanizing bicycle tires. Rudolf Menninger, Ludwigsburg, Württemberg.

Process Patents

The United States

1,549,729 Process of manufacturing a rubberized, fibrous composition. Paul Beebe, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,550,160 Method of manufacturing impressed molds of vulcanized india rubber for articles of soft rubber which in regard to surface decoration resemble fabrics. Gustaf Hakanson, Viskafors, Sweden.

1,550,636 Method of forming an openwork rubber mat. George Hunter Robinson, London, England.

1,550,653 Method of combining a plurality of sections of raw rubber to form an air tube for pneumatic tire. Thomas Baker McLeroth, London, England.

1,551,040 Method of building a tire casing. Melvin A. Marquette, assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts.

1,551,046 Method of making annular tubes. Jeremiah M. O'Connor, Holyoke, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.

1,551,081 Method of making a valve cup by impregnating the fabric with Babbitt metal and rubber. Frank Wright, Springfield, Ohio.

1,551,847 Process and apparatus for making hollow elastic, decorated rubber balls. Ralph E. Riley, assignor to The Miller Rubber Co., both of Akron, Ohio.

1,551,999 Method of building up air tubes for pneumatic tires. Thomas Baker McLeroth, assignor to T. B. McLeroth (Tubes) Limited, both of London, England.

1,552,625 Process of making molded fiber articles by treating with a natural latex. Chauncey C. Loomis, Yonkers and Horace E. Stump, Brooklyn, both in New York, assignors to The Hevea Corporation.

1,552,950 Method of tire construction. Harold B. Pusher, assignor to The General Tire and Rubber Co., both of Akron, Ohio.

The Dominion of Canada

253,154 Process of making water bags. Howard G. Carter, Detroit, Michigan, U. S. A.

253,170 Process of vulcanizing rubber goods. Harold Hill Duke, Sydney, New South Wales, Australia.

253,200 Method of enclosing soft rubber core in a textile sheath. Edward F. King, Wakefield, Rhode Island, U. S. A.

253,291 Method of manufacturing tire treads. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of George Frederick Fisher, Roselle, New Jersey, U. S. A.

The United Kingdom

235,281 Method of producing rubber lined containers for fluids. F. C. Matthews, and India Rubber, Gutta Percha and Telegraph Works Co., Ltd., 106 Cannon street, London.

235,318 Method of forming artificial teeth, including vulcanite work. A. E. Reed, 66 St. Martin's, Stamford, Lincolnshire.

235,321 Vulcanizing under direct gas pressure and method of molding india rubber. J. Goldstein, 29 Passage des Favorites, Paris, France.

235,700 Method of molding tyres. G. Spencer Moulton & Co., Ltd., and J. G. Brockbank, 2 Central Buildings, Westminster, London.

236,147 Process for recovery of rubber and fiber from old tyre covers. R. Marie, 55 Rue Danton, Lavallois-Ferret, Seine, France.

Germany

417,616 (December 13, 1923). Method of printing thin unvulcanized rubber sheet. Paragummiwerk m. b. H., Köln-Deutz.

417,653 (July 7, 1920). Method of making hollow rubber articles. Paramount Rubber Consolidated, Inc., Philadelphia, United States; represented by: B. Bloch, Berlin, N. W. 21.

New Goods and Specialties

New Hard Rubber Pipe

A new pipe is ready for smokers. It is sold under the trade name of "The Patriot" and according to the manufacturer, is non-absorbent, void of nicotine pockets, cannot become clogged and never bites the tongue, but insures a cool, dry smoke at all times. As may be seen in the illustration this pipe is made along the lines of the under-slung model used by Vice-President Dawes. It is made in one piece entirely of hard rubber and therefore will not warp nor split. It has a snug fitting, threaded bowl of Bakelite material, guaranteed fireproof, and a dry or free smoker, and highly polished mouthpiece. "Patriot" pipes may be secured in brown or black hard rubber.—Superior Hard Rubber Co., Butler, New Jersey.

"The Patriot" Pipe

Leather Garter With Elastic Insertion

For the woman who wants something different from the elaborate silk, chiffon, etc., garter, there is a leather garter, illustrated, now on the market. This is made in style of a belt and fastens by a buckle. The garters are made with a rubber elastic insert under the buckle and which provides for ease and comfort and yet security while being worn. The garters may be obtained in several different leathers, patent, suede, etc., and in various colors and with several kinds of embroidered stitching.—Enterprise Belt Manufacturing Co., Inc., 26 West 17th street, New York, N. Y.

Enterprise Leather Garter

Syringe for Physicians' Use

The "Asepto" syringe, especially designed for professional use and stated by the manufacturer to have been adopted by the U. S. Army and Navy Medical Corps and recommended by officers in the Public Health Service, has a glass barrel and a molded rubber bulb. The features of this syringe illustrated are that the capacity of the bulb is so regulated that one pressure either fills or empties the syringe and furthermore the small hole in the neck of the bulb is so constructed that fluid will not enter the bulb upon tipping the syringe point up. This result is, of course, due to the air pocket in the bulb. These syringes are made in a number of different styles, each especially adapted for some particular medical purpose.—Becton, Dickinson & Co., Rutherford, New Jersey.

"Asepto" Syringe

Two Color All Rubber Brands

Two-color all rubber brands are now available to the manufacturers of rubber goods. They are easily applied and during 1925 some two millions of these have been used with complete satisfaction. The advertising value of these brands on rubber goods is an important feature, while another is the fact that these brands unite flush and smoothly to the rubber article, leaving no fin as the metal template brands do, and from which cracks or tears can easily start. These brands are adapted for tires, belts, hose and other molded articles.—The Naugatuck Chemical Co., 1790 Broadway, New York.

Sponge Rubber Kneeling Pad

One of the various styles of the "Rest-Easy" line of cushions is illustrated herewith. This kneeling pad is made of sponge rubber clear through and will not deflate nor collapse. It can be used either in the house or out of doors, for example, in the garden, wherever a soft, easy and cool pad is desired. This kneeling pad will add decidedly to the comfort and pleasure of the user. It is strong and durable and made to give long service. The pad comes in a brown color and is 8 by 16 inches by 5/8 inch thick.—Faultless Rubber Co., Ashland, Ohio.

Faultless Kneeling Pads

Rubber Protector for Nursery Bottles

An interesting device for the protection of baby's nursing bottle has recently been patented. As may be seen in the illustration the bottle is covered with a sort of grating of rubber, which completely encircles the bottle. This protector is molded in one piece and fits snugly to either an oval or a round bottle. It is especially intended for the 8-ounce bottle. It is very light in weight, an advantage for the child who is large enough to hold, at least partially, its own bottle, and the rubber covering is attractive in appearance. Once attached, the protector does not need to be removed, for it can be sterilized with the bottle, in the same way as the nipple. It can be put on or taken off very quickly.

The use of this rubber protector will save many broken bottles says the inventor, and in this way it saves milk, extra labor on the mother's part and also helps protect the baby from broken glass. Even when the protector is on, the bottle will stand upright.—Joseph McCrink, 207 Sussex avenue, Newark, New Jersey.

Nursery Bottle Shock Absorber

Tube Repair Kit

Under the name "Never Off Patch" a means of making repairs on tubes is being offered to the public. The following directions are given with the repair kit: roughen the tube to be repaired with the buffer top of the kit. After making sure that the surface is clean, apply a coat of Para patching cement and allow this to dry, without blowing on the cement. Then cut a piece of "Neveroff" of sufficient length to make the repair. Press this into place after removing the holland backing. The tube, according to the manufacturers of "Neveroff" may be used immediately.—Fidelity Co., Allentown, Pennsylvania.

Tumbling Toys

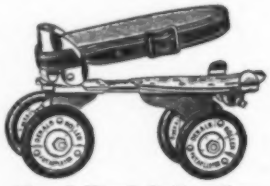
Two toys that will tumble and tumble everywhere but always land on their feet have been added to a well-known line of rubber novelties, and are shown in the illustrations. It undoubtedly will be fascinating for the children to have rubber toys that are so active. First, there is the Dodo Duck. Long thought to be extinct, here is the Dodo once more, but more interesting and more atractive than his namesake. There is a wise gleam in his eye, for he knows that wherever he falls, he will always land head up. Then there is Tumble Tom, almost the livest of all the tumble toys, a jolly laughing figure, as cheerful as his friend, Old King Cole of nursery rhyme fame.—Anderson Rubber Co., Akron, Ohio.

The Dodo Duck

Tumble Tom

Rubber Tired Roller Skate

A roller skate with rubber tires is being offered under the name of "Speed King." It is said to be noiseless, and according to the manufacturer is both the longest and the shortest skate on the market, being adjustable from 6¼ to 11¼ inches, as well as being easy running, fast and strong. The skates are finished in nickel and the boys' and men's skates have a metal back while on the girls' skates, a leather back is provided. Ball bearings are used with two rows of 3-16-inch balls, nine in each row and protected from dust. Front and rear are single piece hangers which make truss supports for the foot and heel plates with turned over edges, which with the channel extension bar practically eliminates the possibility of breakdown.



"Speed King" Roller Skate

The rubber section has a flange that extends into the center of the roller and the two side plates are secured in position against the flange by three heavy rivets passing through the solid rubber. It is stated that the rubber tires cannot come off.—Kohler Die & Specialty Co., DeKalb, Illinois.

Rubber Insulated Aerial Wire

Unlike ordinary radio aerial wire, which is either solid and bare or stranded with wires separately enameled, a new aerial wire, the Musselman Selective Antenna, a dual conductor, utilizes rubber insulation and is said to afford not only greater selectivity, but also better tone quality and volume, and to be practically free from static troubles. The core is made of 4,200 circular mil solid copper wire, covered with 1-32-inch high quality rubber, and over which is braided fine, tinned copper wire, giving a capacity of 4,800 c. m. Used as an aerial the braid is a very efficient wave collector, and the rubber-insulated core acts as a magnetic field ground. When used as a loop the core acts as a metallic return ground. An excellent feature of this aerial wire illustrated is the simplicity of insulation. On the roof it may be put up almost as easily as a clothes line. It may be carried with one when going camping and arranged between two trees out of doors or laid across the awning of the motor boat or attached very simply to the inside of the roof of the cabin. When erected out of doors, a system of lead-ins is used, but these may be eliminated when the aerial is attached indoors.—Herbert H. Frost, Inc., 154 West Lake street, Chicago, Illinois.

Musselman Selective Antenna

"Speed-Mo" Rubber Stamp Pads

After three years of experiment, a new all rubber stamp pad, illustrated, is now being offered to the public. A special soft rubber is used as a filler reservoir and no felt, fabric, wood or glue are employed. A renewable porous rubber pad does not wear out the rubber stamps and does not grow fuzzy or gummy. It inks the stamp uniformly and gives clear, sharp impressions, and permits rapid work. According to the manufacturers rigid tests have given over four million impressions without showing signs of wear. The "Speed-Mo" pad is said to be not only sag proof but also sweat, dust and lint proof. The lid can be opened with one finger and noiseless rubber base prevents slipping and scratching. The pads do not become excessively wet on moist days as do many other types of pad and are resilient and easy to work from. They are stated to be very durable and capable of standing constant and hard usage. A trial outfit of two different sizes of pads is offered to dealers only.—Rivet-O Mfg. Co., Orange, Massachusetts.

New Rubber Stamp Pad

New Rubber Lined Fishing Creel

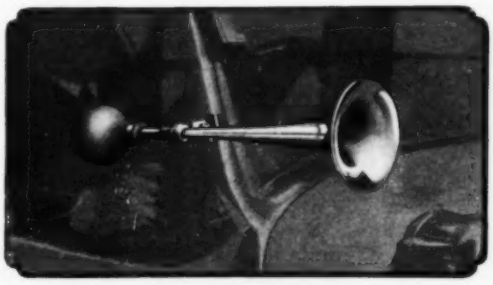
The man who is going on a fishing trip and wondering where and how he is going to pack his creel will be glad to know of this novelty which is no more trouble to carry than an extra shirt. This creel can be put in a suit-case or in the lightest pack, thrown into the bottom of an automobile or packed on a horse. Its main feature is that it folds at a touch of a spring, into a flat, compact bundle, but when the spring is released the creel resumes its full shape quickly and naturally.

R. & W. Fishing Creel

The R. & W. creel is made of fine waterproof duck, treated by an electrolytic process to prevent mildew even if it is packed away damp. The creel is lined with double-faced rubber sheeting and the outside is entirely bound with leather. The ventilating holes in the sides and bottom are ample to prevent the fish from sweating. In the cover is a pocket for bait.—Summers Manufacturing Co., 700 South Los Angeles street, Los Angeles, California.

Musical French Auto Horn

A French auto horn, known as the "Voice of Paris" and to accessory dealers under the trade name of "Trompet" is herewith illustrated. This horn has a pleasing and distinctive musical signal of discreet intensity—far carrying and efficient. The Trompet is graceful in shape, made of nickeled brass, and is complete with windshield attachment. It is operated by a heavy rubber bulb. The



Trompet Auto Horn

horn comes in several sizes and is constructed for both open and closed cars, and can easily be attached with a few minutes' work.

Two other styles of musical horns are: the Ciccaphone, No. 3, stated to be the newest development of the one-tone musical sounding horn and recently released from Europe; and Le Testophone, which is built of four cornets of different sizes but operated by one heavy rubber bulb. Le Testophone plays a series of notes to form certain tunes.—Gilmore-Harris-Hornbeck Co., sole importers and distributors, 309 North 15th street, Philadelphia, Pennsylvania.

Rubber Protection for the Football Player

Football has long been the popular game in the fall, but few realize the importance of rubber in this rugged sport. From head to toe, the player can now be protected from injury by "foam" rubber, a special composition, extremely light in weight, and said to retain resiliency and neither deteriorate nor harden.

An important member of the line of rubber safeguards for the player are football pants shown in Figure A. These are made of eight-ounce army duck reinforced with leather and padded with rubber which combines lightness in weight with perfect protection. The pants are made full, rip proof and with tapered legs. They are stated to be the only football pants ever made with foam rubber padding.

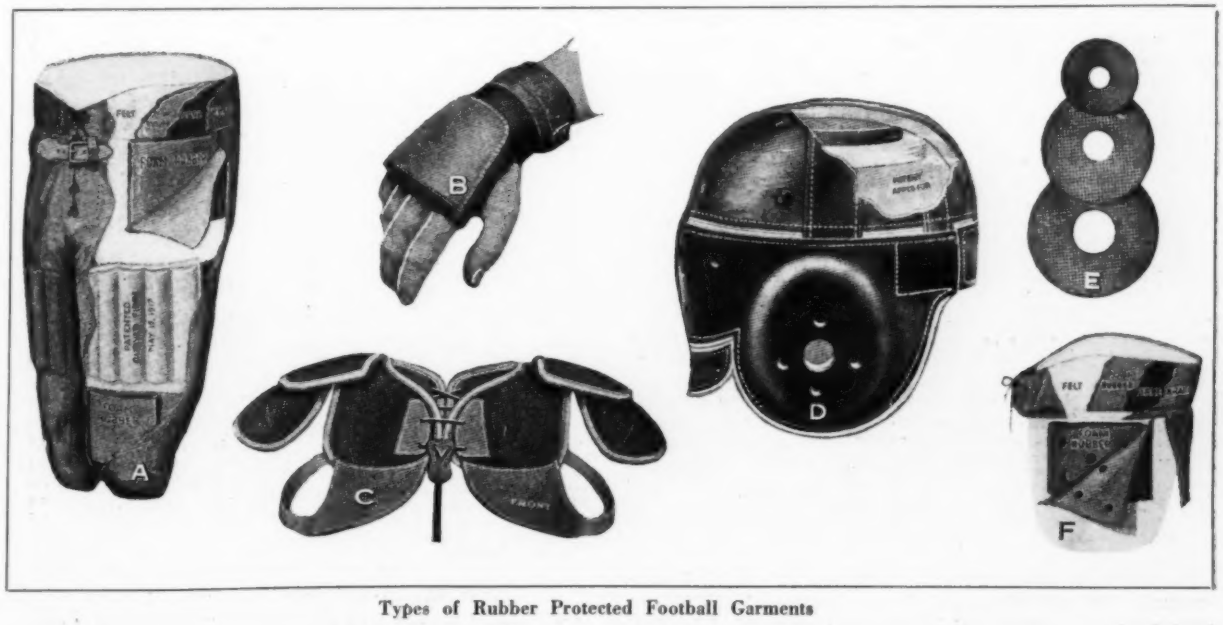
Two of the newest additions to the line of rubber-protected football clothes are the kidney pads, Figure F, and the pad for the knuckles and the back of the hand, Figure B. The kidney pad is made of flexible fiber faced with khaki and padded with rubber. There are also foam rubber spine protectors and rubber pads backed with felt to safeguard the hip bones. There are also rubber bruise pads, Figure E, in various sizes. The football glove, Figure B, is constructed of soft tanned leather, padded with rubber over the knuckles and the back of the hand. It has a laced palm and is strapped at the wrist. Either right or left hand glove may be obtained.

Most of the shoulder pads, Figure C, use elastic arm bands or elastic chest straps. One model, however, designed to comply with the new regulations concerning shoulder pads, is a distinctive pad; collar bone, back and chest, and shoulder caps are all protected by layers of light weight rubber, which are placed beneath the fiber and felt padding. The pad illustrated is completely lined with rubber.

Lastly, there are several varieties of helmets, one of which is shown in Figure D. There is an adjustable type of helmet without chin strap, with elastic laced back that permits firm and snug adjustment. There is the usual felt padding and an additional soft foam rubber cushion ring in the crown. One type has both this ring and a special foam rubber ear cushion.

In another style of helmet, the entire crown is lined with soft and resilient rubber. There is also an elastic forehead adjustment and an elastic chin strap. There are several other styles of helmets—all with some type of rubber protection.—The P. Goldsmith's Sons Co., Cincinnati, Ohio.

A NEW CATALOGUE SHOWING INTERESTING SANITARY RUBBER specialties has been issued by the Empire Shield Co., 561-563 Broadway, New York, N. Y. Among the items shown are the "Comfortex" sanitary step-ins, which are made of a fine grade of zephyr weight rubber, several styles of "Comfortex" baby pants and of rubberized and all-rubber household aprons.



Types of Rubber Protected Football Garments

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

NUMBER	INQUIRY
668	Manufacturers of rubber insulators for switch handles.
669	Makers of patches for rubber goods.
670	Manufacturers of machine for putting edge on bathing caps.
671	Machines designed to trim rubber sponges.
672	Source of supply of standard rubber band tubing.
673	Hand machine for separating bark and latex of the Landolphia vine.
674	Manufacturers of rubber covered cloth for toilet kits.

Foreign Trade Opportunities

Address and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th Street, New York, N. Y.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
16,524	Dutch West Indies—Rubber soled canvas shoes.	Purchase and Agency
16,543	Turkey—Rubber sponges	Purchase
16,605	Canada—Rubber goods, medicinal, etc.	Purchase
16,634	Germany—Rubber goods for hospital use.	Purchase
16,635	Germany—Rubber aprons	Purchase
16,636	Germany—Toy balloons	Purchase and Agency
16,637	Uruguay—Stationers' rubber bands	Agency
16,638	Egypt—Rubber soles and heels	Agency
16,639	India—Toy balloons	Agency
16,640	Netherlands—Rubber boots and shoes	Agency
16,642	Chile—Tires, especially for trucks	Agency
16,642	Czechoslovakia—Automobile tires	Agency
16,659	Australia—Women's elastic anklets	Purchase or Agency
16,659	Paraguay—Automobile tires	Agency
16,741	Honduras—Solid rubber tires for automobiles and trucks	Purchase and Agency
16,764	Germany—Tennis shoes	Purchase and Agency
16,787	Germany—Hard rubber for medical and surgical instruments	Purchase
16,788	Netherlands—Rubber patent articles, shields, heels, soles, sporting goods, etc.	Agency
16,789	Austria—Medical and technical rubber goods.	Sole Agency
16,790	Argentina—Medical and surgical rubber goods.	Agency
16,831	India—Rubber goods	Agency
16,882	Italy—Footwear, sponges and physical culture articles	Agency

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

NUMBER	SPECIAL CIRCULAR
970	"Tire Exporters' Weekly News Letter."
*971	"Rubber Footwear Exports from United Kingdom during First Six Months of 1925."
972	"Comparative Exports of Rubber Footwear from Producing Countries to European Markets During 1924."
*973	"Canadian Exports of Rubber Belting."
*974	"French Tire Exports during First Half of 1925."
975	"Tire Exporters' Weekly News Letter."
*978	"Crude Rubber Exports from the United States for the Month of July, 1925."
979	"Tire Exporters' Weekly News Letter."
*980	"Italian Tire Exports during First Half of 1925."
981	"Comparative Tire Exports from the United States, Canada, United Kingdom, France, Italy, and Germany during First Half of 1925."
983	"Comparative Statement Showing Rubber Footwear Exports from United States, Canada and United Kingdom during First Half of 1925."
985	"Tire Exporters' Weekly News Letter."
986	"Export Trade Notes on Solid Tires."
988	"Tire Exporters' Weekly News Letter."
*990	"French Exports of Rubber Footwear."
*991	"French Tire Exports during July, 1925."
*992	"British Exports of Automobile Casings, July, 1925."
*994	"Market for Machinery Belting in India."

BELGIUM'S IMPORTS DURING THE FIRST HALF OF 1925 OF AMERICAN-MADE tires and tubes reached a total value of $225,293, as compared with a similar total for the entire year 1924 of $240,211. Imports of pneumatic casings during the six months period of 1925 were estimated at $198,997; inner tubes, $26,055; and solid tires, $241.

Customs Appraisers' Decisions

DRAWBACK

RUBBER SUBSTITUTE (FACTICE). Manufactured by the Stamford Rubber Supply Co., Stamford, Connecticut, with the use of imported rapeseed oil or soya-bean oil. Rate effective on or after May 2, 1925. The drawback allowance shall not exceed the duty paid, less 1 per cent thereof, on the imported oil used in the manufacture of the exported product, as shown by the sworn abstract from the manufacturing records filed with the drawback entry.—*Treasury Decisions,* Volume 48, No. 5, page 6.

SUSPENDER WEBBING. Manufactured by the Everlastik, Inc., New York, N. Y., at its factory in Pawtucket, Rhode Island, with the use of imported artificial silk yarns. Rate effective on or after August 14, 1924. The allowance of drawback shall not exceed the duty paid, less 1 per cent thereof, on the quantity of imported artificial silk yarn used in the manufacture of the exported webbing, as shown by the sworn abstract from the manufacturing records filed with the drawback entry from the records provided for above, less the quantity thereof which the value of the waste will replace.—*Treasury Decisions,* Volume 48, No. 5, page 7.

Report of Rims Inspected and Approved by The Tire and Rim Association of America, Inc.

Size	August, 1925		First 8 Months 1925	
Clincher Rims	Number	Per Cent	Number	Per Cent
24 x 3	.....	...	8,885	0.1
26 x 3	4,400	0.3	65,870	0.4
28 x 3	.....	...	2,044	0.0
30 x 3	.....	...	197,441	1.1
30 x 3½	260,556	14.6	3,371,001	19.1
31 x 4	33,599	2.4	553,283	3.2
Straightside Rims (Pass.)				
25 x 3½	460	0.0	460	0.0
27 x 3½	18	0.0	1,666	0.0
28 x 3½	466,527	26.0	5,412,319	30.8
29 x 3½*	.....	...	144,390	0.8
30 x 3½	34,196	1.9	507,761	2.8
32 x 3½	511	0.0	19,623	0.1
28 x 4*	337,795	19.0	2,109,965	12.0
29 x 4*	137,775	7.7	1,064,340	6.2
30 x 4*	2,653	0.1	287,464	1.6
31 x 4	122	0.0	1,515	0.0
32 x 4	34,284	1.9	204,814	1.2
33 x 4	2,072	0.1	13,383	0.1
34 x 4	.....	...	503	0.0
29 x 4½*	52,887	3.0	360,349	2.0
30 x 4½*	191,434	10.6	1,030,854	5.9
31 x 4½*	4,677	0.3	240,570	1.4
32 x 4½	31,215	1.8	427,608	2.4
33 x 4½	.....	...	1,252	0.0
34 x 4½	5,910	0.3	79,902	0.5
36 x 4½	154	0.0	154	0.0
30 x 5*	21,482	1.2	262,178	1.5
31 x 5*	48,915	2.7	345,955	2.0
33 x 6*	14,326	0.8	40,592	0.2
Truck Rims				
30 x 5	59,618	3.3	559,133	3.2
34 x 5	7,339	0.4	77,614	0.4
32 x 6	15,676	0.9	98,755	0.6
36 x 6	8,257	0.5	44,650	0.3
34 x 7	3,714	0.2	16,607	0.1
38 x 7	.....	...	6,396	0.0
36 x 8	703	0.0	8,506	0.0
40 x 8	5	0.0	8,816	0.0
40 x 10	2	0.0	606	0.0
44 x 10	119	0.0	521	0.0
Total	1,781,401	100.0	17,577,746	100.0

	Per Cent		Per Cent
Motorcycle	0.3	Motorcycle	0.5
Clincher	17.0	Clincher	23.4
Balloon	71.4	Balloon	64.5
Regular S. S.	6.0	Regular S. S.	7.0
Truck 20"	4.4	Truck 20"	3.9
Truck 24"	0.9	Truck 24"	0.7

*Balloon casings.

ANNUAL CONVENTION OF N. T. D. A.

The annual convention of the National Tire Dealers' Association, Inc., will be held November 17-19, 1925, headquarters being at the Hotel Chase, St. Louis, Missouri. An interesting program is being prepared.

The Editor's Book Table

Book Reviews

"FERGUSON'S CEYLON DIRECTORY, 1925." Revised up to May, 1925. Compiled and edited by the staff of the *Ceylon Observer*. Published by the Ceylon Observer Press, Colombo, Ceylon. Cloth, 1,924 pages, with index, 5½ x 9 inches.

Of greater size, service, and interest than any of the yearly directories issued since 1883, when the late Mr. J. Ferguson brought out his modest "Manual for Rubber Planters," the 1925 volume is welcomed everywhere. The commercial information, which includes statistics for many years and data about merchants, traders, factories, horticultural and other industries, is extensive. Especially helpful to the rubber trade are the latest details about rubber planted acreage, company capital, personnel, and operations; and the reaction of rubber planting interests to restriction. The rapid rise and spread of the planting industry in Ceylon is shown by the statement that whereas there were but 104,000 acres set out to rubber in 1906, the acreage rose to 411,400 in 1924, and reached 433,100 in 1925.

"CHEMISTRY IN MODERN LIFE." By Svante August Arrhenius. Translated from the Swedish and revised by Clifford Shattuck Leonard. D. Van Nostrand Co., New York, 1925. Cloth, illustrated, indexed, 286 pages, 5¾ x 8½ inches.

This book is one of the Library of Modern Sciences stressing the influence chemistry has had upon human progress. The distinguished author, Professor Arrhenius, is director of the Nobel Institute and continues the succession of brilliant names which Sweden has supplied to science.

The book is written in untechnical language and outlines the contribution of chemistry to human progress from the earliest times to the present. The translator writes forcefully in his preface words of warning on the reckless waste of American resources in fuel and oil and the imperative need for their conservation. The book is replete with information and interest for the technologist as well as the general reader. Included in the list of chapters is one on cellulose and rubber, touching on artificial silk and synthetic rubber.

"UNITED STATES GOVERNMENT MASTER SPECIFICATIONS FOR RUBBER GOODS (METHODS OF PHYSICAL TESTS AND CHEMICAL ANALYSIS)." Circular of the Bureau of Standards No. 232, Washington, D. C.

This pamphlet of 42 pages is U. S. Government Master Specification No. 59a. It was officially promulgated by the Federal Specifications Board on June 15, 1923, for the use of departments and independent establishments of the government in the purchase of rubber goods.

Part I covers Methods of Physical Tests and Part II Methods of Chemical Analyses. Together they serve as a complete guide for determining the quality of mechanical rubber goods, tires, tubes, etc., by the approved methods of physical and chemical tests. The methods are the result of much experimental development and are invaluable for rubber manufacturers whether they supply goods to the government or not.

"UNITED STATES GOVERNMENT MASTER SPECIFICATIONS." Published by the Department of Commerce, Bureau of Standards, Washington, D. C.

These specifications were officially promulgated by the Federal Specifications Board on given dates for the use of the departments and independent establishments of the Government in the purchase of rubber goods. The circulars and titles are as follows:

No.	
59a	Rubber Goods (Methods of Physical Tests and Chemical Analyses).
230a	Surgical Operating Pads.
258a	Mercerized Cotton Airplane Cloth, Grade A.
312	Rubber Gloves for Electrical Workers.

New Trade Publications

"STEDMAN REINFORCED RUBBER FLOORING" IS THE TITLE OF AN attractively printed and illustrated publication issued by the Stedman Products Co., South Braintree, Massachusetts. Photographs show rubber flooring installations in leading hotels, hospitals, schools, churches, residences and offices of the country, while specifications and technical data supply additional information.

"INTERNATIONAL TRADE IN MACHINERY BELTING," BY E. G. Holt, assistant chief of the Rubber Division, Department of Commerce, reviews conditions in the belting industry, both domestic and foreign, and also supplies some important information regarding a leading class of rubber and balata goods.

A NEW AND INTERESTING CATALOG WHICH SHOWS THEIR LINE of crêpe soled and other sport shoes for every kind of sport and in many different varieties has just been issued by The Athletic Shoe Co., 916-934 N. Marsfield avenue, Chicago, Illinois.

THE LEYLAND & BIRMINGHAM RUBBER CO., LTD., LEYLAND, Lancashire, England, has distributed a new price list and catalog of its products for golf and tennis use, including golf clubs, golf bags, shoes, tennis racquets, etc.

"SOME HOME, OUTDOOR AND GENERAL USES OF RUBBER," A well-illustrated booklet published by the Propaganda Department, Rubber Growers' Association, Inc., 2, 3 and 4 Idol Lane, Eastcheap, London, E. C. 3, England, pictures and describes the preparation of rubber from the plantation to the finished product while various illustrations represent some of the many uses of rubber as displayed at the British Empire Exhibition.

THE FALL EDITION OF THE SPORTING GOODS DEALERS' DIRECTORY published by *The Sporting Goods Dealer*, St. Louis, Missouri, has listed among its many items some of the products of well-known rubber companies.

"FACTS AND FIGURES OF DOLLAR RUBBER, MINING AND INDUSTRIAL Companies—15th Edition," published by Fraser & Co., Singapore, contains valuable statistics regarding the rubber companies of Malaya.

A HANDSOME FOLDER ILLUSTRATED TO SHOW THE FIRM'S ACtivities and containing a description of the organization, clarified by a map, has been received from the Compagnie Générale d' Electricité, Paris, France.

THE NORTHERN POLYTECHNIC, HOLLOWAY, LONDON, N. 7, England, is publishing its catalog of science and university courses, included in which are courses in Rubber Technology run in collaboration with the Institution of the Rubber Industry.

"THE MALAYAN TRADE ANNUAL, 1925," PUBLISHED BY SAMPson Low, Marston & Co., Limited, London, England, represents a review of Malayan industries, in which rubber is mentioned as the country's most important agricultural product.

A. S. T. M: STANDARDS ADOPTED IN 1925. THIS PAMPHLET comprises the first supplement to the Book of A. S. T. M. standards and contains specifications on Non-Ferrous Metals, Cement, Lime, Gypsum and Clay Products and Miscellaneous Materials. Among the latter are tire fabrics, belt and hose ducks.

THE ROESSLER & HASSLACHER CHEMICAL CO., 709 SIXTH avenue, New York, N. Y., issues a monthly rubber chemicals bulletin quoting current prices for chemicals supplied to the rubber trade.

AMERICAN EXPORTS OF RUBBER HEELS AND SOLES REACHED A TOTAL value for the first six months of 1925 of $574,713, as compared with the corresponding figure for the six months previous of $484,019.

Abstracts of Recent Articles

STANDARDIZATION OF TENNIS BALLS. Illustrated description of a machine for measuring the deformation on various balls when compressed by a known force of constant amount as indicating the relative playing weights of the balls.—P. H. Stevens. *Lawn Tennis and Badminton*, and *Rubber Age*, London, September, 1925, 346-348.

THE DYNAMICS OF THE GOLF BALL.—Charles L. Abernethy. *India Rubber Journal*, August 15, 1925, 271-276. Illustrated.

TWIST IN TIRE CORD AND SOME PHYSICAL EFFECTS.—H. P. Gurney and E. H. Davis. *India Rubber Journal*, August 15, 1925. Graphs.

THE ACTION OF LIGHT ON RUBBER. Report of an exhaustive research applied to raw rubber, concluding with some industrial applications of the research as follows: (1) improvement of the accelerated aging test of rubber; (2) the preservation of raw rubber, unvulcanized rubber mixings and vulcanized rubber articles; (3) the vulcanization of rubber.—Keiichiro Asano. *India Rubber Journal*, 1925, August 22, 307-10; August 29, 347-52; September 5, 389-96. Illustrations and graphs.

VULCANIZATION AND ACCELERATORS. Part II. Serial, André Dubosc, *Rubber Age*, New York, August 25, 341-342, September 10, 376-377.

AGING TESTS ON RUBBER COAGULATED WITH ACETIC ACID AND PARANITROPHENOL. Tests with smoked sheet prepared in the manner indicated show that the P.N.P. is effective in a proportion of under 0.03 per cent of the latex, or about one-fifth per cent of the dry rubber produced. No doubt still smaller proportions would be effective but further experience is required to reduce the amount of P.N.P. to the minimum. The conclusion is confirmed that P.N.P. can be safely used as a fungicide without any deteriorating effect on the rubber.—H. P. Stevens. *Bulletin Rubber Growers Association*, August 1925, 496-498.

AROMATIC OXIDATION PRODUCTS OF THIOUREA AS VULCANIZATION ACCELERATOR; ALSO THE FORMATION OF ELASTIC SULPHUR. (German.) Edgidis Romani and Camillo Pelizzola. *Kunstoffe*, September, 1925, 156-157.

THE ACTION OF SILICA IN RUBBER MIXINGS. (German).—Dr. F. K. *Gummi-Zeitung*, August 28, 1925, 2102-2104. Charts.

RUBBER RESEARCH IN 1924. (German). A review with 86 references. Marianne Pieck. *Gummi-Zeitung*, 39, 1427-30, 1490-1492 (1925) Correction, 1556.

DIRECTIONS FOR A UNIFIED SYSTEM OF ANALYSIS OF RUBBER (German). A systematic procedure for the physical and chemical examination of raw or vulcanized rubber is outlined, which is presented with a view to criticism and improvement.—K. Memmler, A. Haanen and E. Kindscher. *Zeitschrift für Angewandte Chemie*, 38, 459-70, 1925.

THE PROBLEM OF VULCANIZATION, III. The Separation of Raw Rubber into its Gel Components by Diffusion. (German.) If raw unworked rubber is immersed in certain organic solvents part of the rubber diffuses into the solvent and a gel skeleton remains behind. The diffusion phenomena described are confined to the action of solvents on unworked rubber, for the swelling power of the latter decreases progressively with the amount of working and a structureless, viscous system is formed which does not represent the colloidal structure or condition of the original rubber.—H. Feuchter. *Kolloidchemische Beihefte*, 20, 434-48, 1925.

HIGHER FATTY ACIDS AND THEIR ANHYDRIDES; DETERMINATION OF IODINE NUMBER AND ITS PRODUCTS OF REACTION; SEPARATION OF SOLID UNSATURATED FROM LIQUID UNSATURATED ACIDS; CEROTIC ACID FROM PEANUT OIL; RUBBER SUBSTITUTES. (German.)—D. Holde. *Zeitschrift der Deutschen Oel und Fett Industrie*, 45, 303-5, 1925.

HEAT OF COMBUSTION OF NATURAL AND "SULPHURIC ACID" RUBBER. (German.) The heat of combustion of plantation pale crêpe rubber is approx. 10,700 cals. per. g. The heat of combustion of "sulphuric acid" rubber is markedly lower than that of natural rubber and depends on the degree of internal polymerization.—F. Kirchhof and O. Matulke. *Berichte der Deutschen Chemischen Gesellschaft*, 57 B, 1266-70, 1924.

THE CONSTITUTION OF THE RUBBER MOLECULE. (French.) *Rec. trav. chim.* A discussion of the work of Harries, Harries and Evers, Boswell, Staudinger and Fritsche, Pummerer and Burkard, and Kirchhof and Matulke.—S. C. J. Olivier. *Recueil des Travaux Chimiques des Pays-Bas*, 44, 229-38, 1925.

WHAT ARE THE REASONS FOR THE CHARACTERISTIC ELASTICITY OF RUBBER? I. THE CHANGING OF THE X-RAY SPECTRUM OF RUBBER ON STRETCHING. (German.) It has been shown that rubber on being stretched acquires a crystalline structure and that highly stretched rubber consists largely of crystals which lie parallel to the direction of elongation. Unvulcanized rubber requires less stretching than vulcanized rubber to show the X-ray diagram characteristic of a crystalline substance. The first stretching of rubber is due to the rearrangement of these structural units in the molecule. Other gel-like substances with little fluidity but a Poisson constant near to 0.5 must also show strong tendencies to stretch.—J. R. Katz. *Kolloid Zeitschrift*, 36, 300-7, 1925.

IMPROVEMENT OF THE TONE OF FIBER STRINGS BY LATEX OR BY SOLVOL. (German.) Cord composed of silk, wool, hemp or other fiber can be improved in strength and in durability by impregnating it with rubber latex. When used for violin strings not only can the appearance of catgut be imitated but the tone of the instrument is much improved. Similarly cord may be treated with solutions of rubber in organic solvents and vulcanized so that it is suitable for use in rackets, chairs, etc. Excellent results are also obtained with "solvol" in place of latex.—Rudolf Ditmar. *Gummi-Zeitung*, 39, 1682, 1925.

EFFECT OF ZINC WHITE AND MAGNESIUM CARBONATE ON THE PHYSICAL PROPERTIES OF VULCANIZED RUBBER. Magnesium carbonate is particularly valuable for its reinforcing power and at the same time accelerated the cure, whereas zinc oxide was most valuable as a white pigment, but retarded the cure. The zinc oxide was lead free, the magnesium carbonate impure (56.98 per cent loss on ignition). These two pigments are used most extensively in Japan.—Y. Fukui. *Report Osaka Industrial Research Laboratory* No. 5, 1-24, 1924.

COAGULATION PHENOMENA IN HEVEA LATEX III. Influence of some chemicals (disinfectants, etc.).—O. de Vries and N. Beumée-Nieuwland. *Archief voor de Rubber Cultuur*, July, 1925, 590-630. Tables. English summary.

REMARKS CALLED FORTH BY AN ARTICLE BY F. KIRCHHHOF "ON water combination of rubber."—O. de Vries. *Kolloid-Zeitschrift*, September, 1925, 178-179.

METHOD OF DETERMINING THE VISCOSITY OF RUBBER SOLUTIONS. A new form of viscosimeter consists of a glass tube with detachable fine mesh wire net at the bottom. The tube is quickly plunged into a glass vessel about 11 centimeters diameter and 17 centimeters high filled about three-fourths full with a solution containing about 15 per cent of rubber until it rests on a wide mesh net stretched across the vessel about 2 centimeters from the bottom.

The viscosity of the solution is determined by the time required for the solution to penetrate the wire mesh and mount up in the tube to a point 10 centimeters from the bottom.

For the above solution meshes of 1 millimeter were used. For heavier solutions a tube made entirely of wire netting has been devised in which the highly viscous solution slowly mounts up from the bottom but no solution penetrates through the upper part.—Dr. Rudolf Ditmar. *Chemiker Zeitung* No. 97, 676-677, 1925. Diagram.

FOR THE FIRST QUARTER OF 1925, THE CAMEROONS EXPORTED 220 tons of rubber, value 1,220,000 francs, against 267 tons, value 520,000 francs in 1924.

News of the American Rubber Trade

Rubber Industry Outlook

THE largest fall and winter business in the history of the automobile tire industry is expected following the great activity of the first nine months of this year. The automobile industry in the past 8 months has produced 2,516,339 cars and 316,213 trucks. These figures show increases of 6 and 23 per cent respectively over the production of the corresponding period of last year.

The more rapid increase in the use of buses and commercial trucks as compared to that of passenger cars has eliminated the seasonal demand for tires and made it practically a steady all the year round condition. Also the popularity of all weather closed car models which allow comfortable winter riding and the practice of persons living in northern United States motoring in the south in the winter create an all-year condition of wear counteracting seasonal demand to an appreciable extent. This change in conditions has become very marked this season and any curtailment that may follow this year will be moderate and brief.

Crude rubber supply and its high prices are still matters of concern to the rubber industry. The acuteness of the situation has lessened temporarily, although the price approximates nearly $.95 a pound. Modification or withdrawal of the Stevenson plan restricting rubber production is being urged as strenuously by British rubber manufacturers as by those of the United States, but so far without success.

The leading tire manufacturers of the country, by recommendation of the tire committee and directors of the Rubber Association of America have decided to avoid artificial stimulation of production this year by agreeing not to ship spring stocks to dealers until after March 1 and to defer solicitation of spring orders until after January 1.

Tire company earnings of the principal companies in the first eight months of the year exceed the total for 1924. One of the most profitable sources of business at present is the sale of bus and truck tires.

Business in the minor division of the rubber industry including footwear, mechanicals, insulation, heels, sundries, hard rubber, etc., continues unusually active for the season and totals to record proportions.

Financial

Dividends Declared

COMPANY	STOCK	RATE	PAYABLE	STOCK OF RECORD
General Tire & Rubber Co.	Pfd.	1¾% q.	Oct. 1	Sept. 20
Canadian Consolidated Rubber Co.	Pfd.	1¾% q.	Sept. 30	Sept. 22
Goodyear Tire & Rubber Co. of Calif.	Pfd.	$1.75 q.	Oct. 15	Oct. 1
Goodyear Tire & Rubber Co. of Calif.	Def.	$1.75	Oct. 15	Oct. 1
Goodyear Tire & Rubber Co. of Canada.	Pfd.	1¾% q.	Oct. 1	Sept. 19
Hood Rubber Co.	Com.	$1.00 q.	Sept. 30	Sept. 19
Norwalk Tire & Rubber Co.	Pfd.	1¾% q.	Oct. 1	Sept. 10
Overman Cushion Tire Co...	Com. "A" & "B"	1½% q.	Oct. 20	Sept. 20
Seiberling Rubber Co.	Pfd.	$2.00	Sept. 15	Sept. 5
Williams Foundry & Machine Co.	Pfd.	1¾% q.	Oct. 1	Sept. 21

New York Stock Exchange Quotations

September 21, 1925

	HIGH	LOW	LAST
Ajax Rubber, com.	11½	11	11
Fisk Rubber, com.	25⅛	24⅝	24⅞
Goodrich, B. F., Co. (1) com.	62⅝	61⅝	61⅝
Goodyear Tire & Rubber, pfd. (7)	107½	106⅜	106⅜
Goodyear Tire & Rubber, pr. pfd. (8)	105⅛	105	105
Kelly-Springfield Tire, com.	18	17⅜	17⅜
Kelly-Springfield Tire, 1st pfd.	61	61	61
Keystone Tire & Rubber, com.	2¼	2	2
Norwalk Tire & Rubber (1.60), com.	16	15¼	16
United States Rubber, com.	59¾	57¾	57½
United States Rubber, 1st pfd. (8)	105¾	105⅜	105⅜

Akron Rubber Stock Quotations

Quotations of September 21, supplied by Otis & Co., Cleveland, Ohio.

COMPANY	LAST SALE	BID	ASKED
Faultless com.	40	35	39½
Firestone com.	130	132	135
Firestone 1st pfd.	100	99½	100
Firestone 2nd pfd.	99½	99	100
General com.	315	300	325
General pfd.	103	101½	104
Goodrich com.	57¼	...	...
Goodrich pfd.	99½	...	...
Goodyear com. V. T. C.	36½	37	38
Goodyear pfd. V. T. C.	104½	...	...
Goodyear pr. pfd. V. T. C.	104¼	...	...
India com.	170	168	...
Miller com.	210	218	220
Miller pfd.	104½	105	105½
Seiberling com.	26	25¾	26
Seiberling pfd.	99¾	99½	...
Star com.	17	...	17
Star pfd.	30	...	...
Swinehart com.	20	12	17
Victor com.	2	2⅛	2¼
Victor pfd.	...	...	...

The Fisk Rubber Co.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, reports net sales for the third quarter of its fiscal year ended July 31 amounting to $24,579,000, profits before taxes being $4,773,000 and net profits after taxes $3,945,000. For the nine months to July 31 net profits after taxes amounted to $5,982,000. This is equal to $31.50 a share on the $18,951,500 first preferred stock. There is also an issue of $1,078,000 second preferred (accumulated dividends amount to $28 a share) and 796,883 shares of common, besides $15,000 of managers' stock.

The B. F. Goodrich Co.

Sales and earnings of The B. F. Goodrich Co., Akron, Ohio, during the first eight months of the year indicate that the full year's business will be better than any the Company has had since the record year of 1919. Earnings for 1925 will be close to $12,000,000 it is estimated, compared with net income of nearly $10,000,000 last year. It is believed the regular dividend of $4 a share will be paid during the remainder of the year.

The Miller Rubber Co.

After making provision of $554,067 for depreciation and $293,000 for Federal income taxes, and after deduction of $72,600 for interest and other miscellaneous items, the net earnings of the Miller Rubber Co., Akron, Ohio, for the first six months of 1925 amounted to $2,048,343 as compared with $2,216,878 for the entire year 1924.

After payment of preferred dividends and premium on retirement of preferred stock, the earnings available for the common stock outstanding were $32.81 per share for the six months' period as compared with $29.52 for the entire year 1924; $25.37 for 1923 and $32.63 for 1922. The company has fully complied with the charter provisions for retirement of preferred stock to December 31, 1925.

India Tire & Rubber Co.

The India Tire & Rubber Co., Akron, Ohio, reports net profits for the first six months of the year of $314,655, equivalent to $27 a share on the common stock. This represents an increase of $1 a share over earnings for the whole of 1924. The plant is operating at capacity, turning out upwards of 1,500 tires a day, and no let down to any extent is anticipated by officials for the next two months at least. More than 75 per cent of the Company's production is bus and truck tires.

New Incorporations

ADAM BLACK & SONS, INC., September 3 (New Jersey), $150,000. Incorporators: Edward A. and Clara Black, both of 21 Cambridge avenue; Frederick O. and Lula E. J. Black, both of 82 Hutton street, both in Jersey City, New Jersey. Principal office, 53-57 Cambridge avenue, Jersey City, New Jersey. To deal in automobile accessories.

AUTO AERO CORPORATION, August 31 (New Jersey), $100,000. Incorporators: Philip Myers, New Dorp, Staten Island; William H. Roberts, 526 East 85th street; Matthew Galligan, 167 East 67th street, both of New York City; John Rauscher, Box 239, Louis avenue, Floral Park, Long Island, all in New York. Principal office, 128 Market street, Newark, New Jersey. To deal in automobile accessories.

BURROW RUBBER COMPANY, September 10 (Delaware), $100,000 par value 2?. Incorporators: M. M. Lucey, M. B. Reese and L. S. Dorsey, all of Wilmington, Delaware. Principal office, with the Colonial Charter Company, 927 Market street, Wilmington, Delaware. To manufacture and deal in articles made of rubber.

BUY-A-BOND TIRE & TUBE CORPORATION, September 9 (New York), $10,000. Incorporators: Israel and Edward A. Danziger, 91 Columbia street; Rose Glick, 44 Court street, both in Brooklyn, New York. Principal office, Brooklyn, New York. To deal in tires and tubes.

W. A. CAMPBELL CO., INC., September 1 (Massachusetts), $5,000 preferred and 250 shares, no par value. Officers: Robert J. Barker, president and treasurer, 45 Maplewood street, Watertown; Albert L. Saunders, clerk, West Medway; Henry H. Harrison, 11 Batchelder street, Melrose, all in Massachusetts. Principal office, Boston, Massachusetts. To deal in rubber floorings.

CRUSADER SERVICE STATIONS INC., September 2 (New Jersey), $100,000. Incorporators: Francis J. and Madeleine M. Smith, both of Second and Penn streets; Eva Nowrey, 1343 Princess avenue, both in Camden, New Jersey. Principal office, Broadway and Burlington streets, Gloucester City, New Jersey. To deal in automobile accessories.

THE CYGNET CO., August 18 (Massachusetts), $5,000. Officers: Roscoe W. Swan, president; Martha O. Swan, treasurer, both of River street, Holden; Frederick H. Bush, clerk, 87 Warner street, Hudson, both in Massachusetts. Principal office, Holden, Massachusetts. To manufacture elastic goods of all kinds.

THE DRALTI PRODUCTS CO., INC., August 12 (Massachusetts), $10,000. Officers: Wallace B. Tibbetts, president; Fred E. Drake, treasurer; George W. Robbins, clerk, all of 196 Main street, Brockton, Massachusetts. Principal office, Brockton, Massachusetts. To manufacture and deal in rubber cement.

GOLDENRULE AUTOMOBILE COMPANY, INC., August 31 (New Jersey), 2,500 shares common stock, no par value. Incorporators: Avedis H. Comfort, Kegham H. Tichian and Walter A. Minster, all of 313 Market street, Camden, New Jersey. Principal office, 313 Market street, Camden, New Jersey. To deal in automobile accessories.

HAWTHORNE AUTO SUPPLY COMPANY, September 3 (New Jersey), $125,000. Incorporators: Fannie Nimaroff, Anna Kalnitsky and Harry Lipschutz, all of 164 Market street, Newark, New Jersey. Principal office, 164 Market street, Newark, New Jersey. To deal in automobile accessories.

F. LESTER KITTLE, INC., July 31 (New York), 100 shares, no par value. Incorporators: Frank Lester Kittle, Grand View; David Scheinker, 1157 46th street, Brooklyn; Naomi Ransom, 660 West 183rd street, New York, all in New York. Principal office, Manhattan. To deal in crude rubber.

RAY MOON TIRE CO., August 3 (Indiana), $10,000. Officers: Ray Moon, president, 134 Wabash avenue; Paul R. Shafer, vice-president, 5th and Wabash avenues; Charles H. Moss, secretary and treasurer, 409 Terre Haute Trust Building, all in Terre Haute, Indiana. Principal office, corner second and Wabash avenues, Terre Haute, Indiana. To deal in tires, tubes and automobile accessories.

SPRINGDALE RUBBER CORPORATION, September 18 (New York), $50,000. William M. Shacknew, 1030 Hoe avenue, Bronx; M. Posner, 237 South Ninth street; F. Hartstein, 75 Linden street, both of Brooklyn; both in New York. Principal office, Manhattan. To manufacture rubber products, etc.

WHITTLE RUBBER CO., August 21 (Delaware), $50,000 preferred, par value $100, and 500 shares no par value. Incorporators: L. A. Peck, H. E. White and M. F. Leach, all of Wilmington, Delaware. Principal office with Philip L. Garrett, 700 Equitable Building, Wilmington, Delaware. To manufacture and deal in rubber hose, belting, etc.

A New Traffic Signal Made of Rubber

SHOWING THE WHEELS OF AN AUTOMOBILE, AS MACHINE IS PASSING OVER THE SIGNAL.

SHOWING HOW THE SIGNAL SPRINGS UPRIGHT AFTER THE CAR WHEELS HAVE PASSED.

The Rubber Trade in the East and South

Sale of assets of the Hodgman Rubber Co., Tuckahoe, N. Y., that was ordered on August 25 by Federal Judge Henry W. Goddard, has not yet been consummated. Several bids have been submitted but the particulars have not been announced.

F. V. Larkin, a rubber expert is covering the East for the rubber division of The Roessler & Hasslacher Chemical Co., 706 Sixth avenue, New York N. Y. His headquarters at present are at the Boston office of the company.

The Rubber Service Department of The Grasselli Chemical Co., 347 Madison avenue, New York, N. Y., announces that the Heyden Chemical Co. of America, Inc., has ceased to offer hexamethylenetetramine as a rubber accelerator and has turned this part of its business over to the Grasselli organization. This accelerator is prepared especially for the rubber industry as Grasselerator 102, and is sold by the Grasselli company and its licensee, the Roessler & Hasslacher Chemical Co., 709 Sixth avenue, New York, N. Y.

F. R. Henderson, president of Crude Rubber & Foreign Produce Corp., 250 West 57th street, New York, N. Y., has been instrumental in organizing and securing a charter for The Rubber Exchange of New York. A meeting was held September 25, 1925, at the Reform Club, Mill Lane, New York, N. Y., for the purpose of perfecting the organization.

Everett W. Boughton has succeeded W. Homer Hendricks as general sales engineer of the New Jersey Zinc Sales Co., 160 Front street, New York, N. Y. Mr. Hendricks, who since 1916 has held the position mentioned, making his headquarters in New York, has been transferred to the company's operating department. Mr. Boughton has had a broad experience in chemical industries, and previous to his association in 1922 with the New Jersey Zinc Sales Co. has been connected with various chemical organizations.

The Grasselli Chemical Co., 117 Hudson street, New York, N. Y., announces that the rubber accelerators department will in the future be designated as the Rubber Service Department, with offices at 347 Madison avenue, New York, N. Y. H. H. Replogle is sales manager.

The Lee Tire & Rubber Co.'s executive offices are being moved from 33 West 60th street, New York, N. Y., to the company's factory at Conshohocken, Pennsylvania, as the dealers' interests can best be served by having the sales and production departments under one roof. D. A. Paterson is advertising manager.

The Star Rubber Co., Akron, Ohio, announces the appointment of L. G. Trench as manager of its branch at Dallas, Texas, and of J. W. Child as a member of the company's New York City sales force.

N. Venditti, formerly associated with the Mason and Braender organizations, is now covering central New York for The Star Rubber Co., Inc., Akron, Ohio.

The Columbia Cement Co., specializing in the manufacture of rubber cements for the shoe, leather, raincoat, and rubberizing trades, has removed its factory from 31 Wyckoff avenue to 142-150 Ingraham street, Brooklyn, New York. At the new location the plant capacity is more than doubled, while there is also an improvement in railway facilities. Organized in 1919, the company is now maintaining representatives in several foreign countries. James J. Colt and Herman Epstein are the chief executives.

The C. J. Tagliabue Manufacturing Co., 18-88 Thirty-third street, Brooklyn, New York, will have a comprehensive exhibit at the tenth Exposition of Chemical Industries, held September 28 to October 3 at the Grand Central Palace, New York, N. Y.

W. T. Fyfe is now office manager at the Buffalo, New York, branch maintained by the Pennsylvania Rubber Company of

America, Inc., Jeannette, Pennsylvania. A good business during the past season is reported by the Buffalo division.

H. H. Yates has joined the sales force of the Dunlop Tire & Rubber Co., Buffalo, New York, making his headquarters at Memphis, Tennessee, and reporting to J. E. Schmidt, Atlanta division manager. Mr. Yates was formerly connected with the Miller, India, and Goodrich organizations.

The sale of the New York Rubber Co.'s plant, Beacon, New York, to the Tucker Rubber Corp., Buffalo, New York, for $95,000 has been approved by Judge William Bondy in the United States District Court in New York. The Tucker company will place the Beacon plant in operation again.

After September 26 the Barber Asphalt Co., manufacturer of Genasco mineral rubber, will be located at 1600 Arch street, Philadelphia, Pennsylvania.

M. Liebel, Jr. has resigned as receiver of the Vulcan Rubber Co., Erie, Pennsylvania, his successor being George B. Wingerter. The plant is being operated on a twenty-four hour basis and the outlook for the future is encouraging. "Vulcan" tires and tubes are manufactured.

The India Tire & Rubber Co., Akron, Ohio, has appointed J. R. Boyle as the company's direct factory representative, with headquarters at Erie, Pennsylvania. Another change in personnel is the establishing of L. L. Barnholt as the manager of the company's New York City branch, Mr. Barnholt having previously served in that locality as assistant branch manager.

Among the exhibitors who are planning to participate in the seventh Southern Textile Exposition which is to be held November 1 to 6 at Greenville, South Carolina, are the following: H. W. Butterworth & Sons Co., Philadelphia, Pennsylvania; Curtis & Marble Machine Co., Worcester, Massachusetts; Manhattan Rubber Manufacturing Co., Passaic, New Jersey; National Aniline & Chemical Co., New York, N. Y.; and the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.

C. H. Crouch is now representing The Star Rubber Co., Inc., Akron, Ohio, in the Dallas territory. He has been covering the State of Texas for the past seven years.

TENTH EXPOSITION OF CHEMICAL INDUSTRIES

The Tenth Exposition of Chemical Industries was opened in Grand Central Palace, New York, on September 28 for a period of one week. In the interval of two years since the last chemical show American chemical industry has made marked progress.

The principal feature of the exposition was the Court of Chemical Achievement where exhibits showing recent development were grouped. Among the companies in this outstanding feature as related to the rubber and other industries were the following: E. I. duPont de Nemours Co., Vulcone and ditolyl guanidine rubber accelerators, soluble colors, dyes and explosives; New Jersey Zinc Co., extremely high purity zinc and cadmium and other products; United States Rubber Co., latex sprayed rubber.

Lecture courses were given in chemical engineering for elementary students and for advanced students and engineers. In the latter group Dr. Norman Madge of The United States Rubber Co., lectured on rubber as a material of construction.

The following companies whose products comprise rubber, or the materials and equipment used in its manufacture were among the extensive list of exhibitors:

The Bristol Co., Waterbury, Connecticut; De Laval Steam Turbine Co., Trenton, New Jersey; J. P. Devine Co., 1366 Clinton street, Buffalo, New York; E. I. duPont de Nemours Co., Wilmington, Delaware; New Jersey Zinc Co., 160 Front street, New York, N. Y.; C. J. Tagliabue Manufacturing Co., 18 to 88 Third street, Brooklyn, New York; United States Rubber Co., 1790 Broadway, New York, N. Y.; Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.

Heads Several Rubber Organizations

Thomas A. Maguire, who was recently elected president of the Goodyear Rubber Co., 787 Broadway, New York, N. Y., well-known rubber manufacturer, also heads the other divisions of this organization, maintained in Connecticut, Minnesota, Missouri, and the Lambertville Rubber Co., Lambertville, New Jersey.

Thomas A. Maguire

Born in 1885 in Orange, New Jersey, Mr. Maguire received his early education in the schools of East Orange, finally entering Princeton, but leaving that university in 1904 in order to go into business, and his first connection was with A. G. Hyde & Sons, New York, N. Y., where he served as assistant credit manager. His rubber career began in 1912, and for four years he was vice-president of the Edward Maurer Co., New York, N. Y., dealer in crude rubber. From 1916 to 1922 he was in charge of the American division of Aldens' Successors, Ltd., London, England, accepting in January, 1923, the position of associate manager of the crude rubber department maintained by The Isaac Winkler & Bro. Co., New York, N. Y. During the month previous he had established an organization to deal in crude rubber, the business being carried forward under the name of T. A. Maguire & Co., Inc.

Mr. Maguire was formerly a member of the board of directors, Rubber Trade Association of New York, while at the present time he is a member of the following organizations: the Washington Society, East Orange, New Jersey; the Newark Athletic Club; the Upper Montclair Country Club; the Hardware Club of New York; and the East Orange Lodge of Elks.

The Rubber Trade in New Jersey

New Jersey rubber manufacturers are much encouraged over present conditions and are looking for a busy fall and winter trade. Tire and tube plants are all running to capacity, and an increasing demand for balloon tires and tubes has been noticeable. Manufacturers of jar rings are in the midst of a busy season, and orders for hose, packing and belting are on the increase. The demand for auto topping is quite active and plants are running nights. Orders for hard rubber goods are increasing and the factories are quite busy.

The Hamilton Rubber Manufacturing Co., Trenton, New Jersey, has purchased the tire and tube production of the Victor Rubber Co., Springfield, Ohio, and will manufacture these products at the Trenton plant. The Hamilton company, through its president, George R. Cook, purchased the goodwill, formulas and patents held by the Ohio concern and also the list of customers. Frank C. Brader has been made sales manager of the tire and tube departments.

The Pocono Rubber Cloth Co., Trenton, New Jersey, is busy with orders for auto topping and is operating two plants.

Whitehead Brothers Rubber Co., Trenton, New Jersey, is particularly active in the hose and belting departments.

The Joseph Stokes Rubber Co., Trenton, New Jersey, reports a big gain in business and the concern is now looking for good fall and winter business in hard rubber goods.

Vulcanized Rubber Co., Morrisville, Pennsylvania, is erecting a modern new boiler house, and four new boilers of 250 h.p.

each will be installed together with new machinery. The company is busy at the present time.

The Combination Rubber Manufacturing Co., Trenton, New Jersey, will shortly increase its working force and operate the plant twenty-four hours a day. There are enough orders to keep going twenty-four hours a day for the next four months. The company believes the prices of tires and tubes will remain firm for some time.

The Sanhican Rubber Co., Trenton, New Jersey, has closed down owing to business conditions. The company was formed a few years ago by officials of the Semple Rubber Co., after the latter concern went into receivership.

The Capitol Rubber Co., Trenton, New Jersey, has added Fisk tires to its sales. The company is also handling Viking and Monarch tires.

The Manhattan Rubber Manufacturing Co., Passaic, New Jersey, is constructing a four-story addition to its main factory building. When completed this addition will be used partly to replace the former boiler room, while the three upper floors will be utilized in the storage of raw material. A. F. Townsend is president.

Paul H. Wendel, prominent Trenton lawyer, has resigned as president and director of the Fisk Flap Rubber & Tube Co., Camden, New Jersey, to devote his time to his law practice. William H. Decker, Washington, D. C., vice-president of the company, is now president.

General creditors of the Newark Rubber Company, Passaic, New Jersey, which has been in the hands of a receiver since July 1, 1921, will shortly receive a first and last dividend. George H. Dalrymple, receiver, filed a final report showing receipts of $102,346.94, and disbursements of $77,953.81, leaving a balance of $77,953.81 for expenses, allowances and a dividend to unsecured creditors whose claims aggregate $87,159.63.

Harry Zahn and associates have acquired the plant and equipment of the Trent Rubber Co., Trenton, New Jersey, at a receiver's sale, for $146,100. The new owners will form a company to operate the plant for the manufacture of automobile tires and tubes and will make improvements.

The rubber laboratories of the The Roessler & Hasslacher Chemical Co., Perth Amboy, New Jersey, are under the direction of C. S. Williams, rubber technologist.

Rhode Island Notes

The rubber manufacturing concerns throughout Rhode Island are now operating steadily, although, as a rule on a somewhat shortened time schedule and in the majority of instances with a more or less curtailed force. And, while business is not rushing or even urgent, there appear to be sufficient orders to keep production moving at the present rate for some time to come. Footwear producers are, in a great measure, marking time and any material improvement in these lines is entirely dependent upon weather conditions. Retail stocks are reported as being limited in practically all sections of the country and a period of heavy rains and early snowfalls would cause a demand that would very perceptibly strengthen the market.

The plant of the Ninigret Co., branch of the Fisk Rubber Co., in Pawtucket, for the manufacture of tire yarns and fabrics, was closed all the first week in the past month for the annual shutdown when a general overhauling and renovation was given the plant. Upon resumption a working schedule was put into force that it is expected will be continued indefinitely.

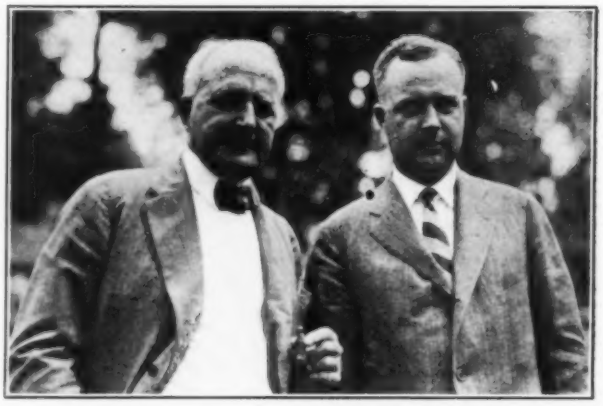
More than 200 attended the foremen's outing of the United States Rubber Co. held at Rocky Point on Saturday afternoon, September 19. Favored by ideal weather the outing party left the company's plant, Valley street, Providence, in automobiles arriving at the resort at 1 o'clock after a twelve-mile ride through the countryside overlooking Narragansett bay. Luncheon was served in the main dining hall after which a ball game was played between the married and single men, the former winning by a score of 14 to 7. There was also pitching quoits, bowling and dancing in the pavilion. Following the clambake, which was served in the late afternoon, the foremen voted to organize a permanent Foremen's Club at a meeting to be held the first Wednesday in October.

The Bourn Rubber Manufacturing Co., Providence, Rhode Island, has been incorporated under the laws of Rhode Island to take over and continue the business of the Bourn Rubber Co., recently sold at receiver's sale following the death of Augustus O. Bourn. The authorized capital stock is $75,000 consisting of 750 shares of preferred stock at $100 each and 10,000 shares of common of no par value. The incorporators are Robert E. Jacobson, Ogden R. Lindsley and William H. Edwards, all of Providence.

Well Known Rubber Man and His Son

The accompanying illustration of two men prominent in the automotive industry has the added interest of being a portrait of father and son, each with good cause rightly proud of the other.

Thomas Midgley, Sr., consulting engineer and inventor, has for many years been well known for his activities in devising



Thomas Midgley Senior and Junior

new and better machines for the manufacture of tires, and is now in charge of the development work of the Fisk Rubber Co., Chicopee Falls, Massachusetts.

Although Thomas Midgley, Jr., has not exactly followed in his father's footsteps, his engineering and chemical achievements are rapidly giving him a similar prominence in the automotive industry.

Following his graduation as a mechanical engineer from Cornell University in 1911, he immediately went to work for the National Cash Register Co., Dayton, Ohio. In 1914 he went with his father on experimental work connected with tires, and also took charge as superintendent of the Midgley Tire & Rubber Co., Lancaster, Ohio, which was organized about that time.

In 1916 he went to work for the Delco Light Co., Dayton, Ohio, and was fortunate enough to come to the attention of C. F. Kettering under whose direction he took up research work when the General Motors Corporation established its research division at Morraine City, Dayton. Here he took up actively the work on detonation for which he was awarded the Nicolls

Medal by the American Chemical Society three or four years ago. Cornell University also conferred degrees on him for the same efforts. His work in connection with Mr. Kettering and Mr. Boyd resulted in the discovery of the value of tetra-ethyl-lead in connection with gasoline for gas engines, which was followed by the organization of the Ethyl Gasoline Corporation, of which he is vice-president and general manager.

The Rubber Trade in Massachusetts

Uncertainty as to crude rubber prices appears to be the only flaw in the generally favorable outlook of the rubber industry. The demand in most branches of the trade is good and most plants are active.

Footwear factories have again resumed full operations with ample orders for autumn and winter lines at revised prices, while heel, sole, cement and other findings manufacturers report a satisfactory volume of business.

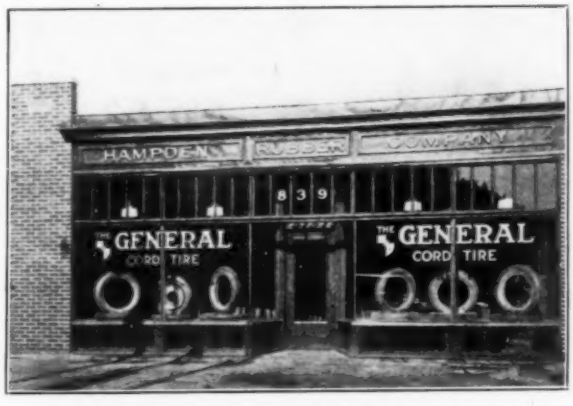
Tire output slackened somewhat during the past month and does not seem likely to resume former levels this year. The usual summer reduction in tire production failed to develop this year because dealers not only replenished low stocks but ordered in excess of current needs in anticipation of further tire price advances.

Mechanical rubber goods plants are all active and price schedules have been revised in line with present raw material costs. The output of rubber flooring steadily increases.

Business in druggists' and sundries lines generally is normal, and weatherproof clothing manufacturers report a fair business for the autumn trade. Insulated wire mills are quite busy for this time of year.

The Boston Rubber Shoe Co., Malden, Massachusetts, a subsidiary of the United States Rubber Co., is planning to build a new and modern cement making and varnish storage plant to replace the buildings destroyed by fire last April.

The Hampden Rubber Co., a distributer of General cord tires, is now established in new quarters at 839 Columbus avenue,



Hampden Rubber Co., Springfield, Massachusetts

Springfield, Massachusetts. At the present location thoroughly modern equipment has been installed, as well as various facilities for meeting the needs of motorists. I. L. Raichelson is sales manager and David E. Newman is general manager.

The Alfred Hale Rubber Co., Atlantic, Massachusetts, reports that Fred S. Mead, Jr. has been appointed manager of production. The company specializes in the production of crêpe rubber and composition soles, and is meeting with success in sales of its Rajah crêpe soles, business being better than last year, heretofore a record period.

The New England Tire & Rubber Co., Holyoke, Massachusetts, is working out plans for reorganization. L. A. Laporte, now president, states that it is hoped to resume production on September 15 or October 1. It is planned to organize a new company under Massachusetts laws with a capitalization of $825,000. The liabilities of the old company will be assumed. A line of balloon tires will be produced as well as the Holyoke chainless tread tire.

A new retail tire store has been opened in the heart of the down-town business district by the Hope Tire Corporation at 136 Federal street, Boston, Massachusetts.

The Rubber Trade in Ohio

A spirit of optimism prevails throughout the Ohio rubber industry. Dealers' business shows signs of being good during the fall months, and the outlook from the standpoint of the manufacturers is better than it has been for the last six years. Sales this year have been the largest in the history of many companies, and price increases in the spring and summer have helped to maintain earnings at a highly satisfactory rate.

A decline of 5 to 30 per cent in automobile tire production was noted among factories in the Akron district during September. Present schedules, however, are still well ahead of last year, and merely reflect a slight breathing spell in the industry, following the rush of business during the spring and summer. Some factories are still running close to capacity, but they are expected to curtail somewhat in the next few weeks. No radical cut in production is expected. With the settling of conditions, and after manufacturers have had an opportunity of supplying their branches, it is believed that the general reduction in fall business will be around 20 per cent.

The spring dating policy, whereby shipments of tires are made in the late fall and winter, to be paid for by dealers in the spring and summer, when sold, will be generally abandoned this year by Ohio plants. This is in accordance with the recommendation of the Rubber Association of America, as a means of conserving the world's depleted crude rubber supply. By curtailing consumption in the winter, it is believed that a reserve stock of rubber may be built up for use in the period of greatest activity during the first half of next year.

Effect of cutting down on advance shipments will be counteracted to some extent, it is predicted, by expansion in the motor industry, which has received added impetus by the bringing out of new models and the many price reductions put into effect. Tire manufacturers here have already noted a considerable increase in orders from the Ford plant, the new model having resulted in the sale of 2,000,000 additional cars for immediate delivery, it is estimated. This will mean 10,000,000 tires for original equipment, figuring four tires and a spare to each car.

Many companies have been behind on orders for heavy duty bus and truck tires. Sales to bus manufacturers and operators during the first eight months of this year have been more than double those of last year. There has been a constantly increasing demand, owing to the many new bus lines being opened up, and the growing use of buses on feeder lines operated by street railway and railroad companies. While still in the experimental stage, the balloon tire is entering the bus and truck field. Exhaustive road and laboratory tests have shown conclusively, say tire engineers, that balloons will serve as economically on trucks and buses as they do on passenger cars.

The Goodyear Tire & Rubber Co. is manufacturing about 35,000 casings and 45,000 inner tubes daily; Firestone Tire & Rubber Co., 30,000 tires and 36,000 tubes; The B. F. Goodrich Co., 25,000 casings and 30,000 tubes; Miller Rubber Co., 12,000 casings and 15,000 tubes; General Tire & Rubber Co. and Mason Tire & Rubber Co. are each making 4,000 and 5,500 tires a day.

A large fall and winter tire business is forecast by officials of the Miller Rubber Co., Akron, Ohio. With the initiation of buses and trucks into constantly widening fields of use, tires are no

longer a seasonal product. Buses and trucks are run in all kinds of weather and on all sorts of roads and need tires both winter and summer. Moreover, the fact that thousands of persons in the north go south in the winter by automobile, has raised the total car mileage hundreds of thousands of miles from October to April. Salesmen and other commercial men make long automobile business trips both winter and summer so tires have become an all-year necessity that knows no season.

E. G. Wilmer, chairman of the board and P. W. Litchfield, vice-president of the Goodyear Tire & Rubber Co., Akron, Ohio, conferred with Dr. Hugo Eckner, recently in Berlin, regarding plans for a new super-Zeppelin airship, to be constructed at the Akron plant, and to be twice the size of the Los Angeles which is the largest dirigible in existence. Goodyear officials say the wreck of the Shenandoah will not affect their plans, and does not prove that travel by airship is not safe.

Twenty thousand employes of the Goodyear Tire & Rubber Co., Akron, Ohio, took part in the company's big Labor Day celebration at Seiberling Field, Sept. 7. The entire day was spent in sport events, and prizes were awarded to winners by C. E. Miller, secretary of the employes' activities committee. Other features were band concerts, fireworks and a flight by the blimp, "Pilgrim." A dance was held in Goodyear hall in the evening.

Improved methods of construction, according to the Miller Rubber Co., Akron, Ohio, are expected to reduce the average number of tire replacements in 1925. In 1917 the average number of tires used as replacements on each car was 4.52, while in 1924 this figure was cut to only 2.74 tires.

The Philadelphia Rubber Works Co., Akron, Ohio, has nearly completed an addition to its plant, which will increase production of reclaimed rubber nearly 40 per cent. A heavy demand for the company's product has been noted this year, on account of the high prices prevailing for crude rubber.

Sales during the first six months of 1925 by the Mohawk Rubber Co., Akron, Ohio, were equal to 71 per cent of sales for the entire year 1924, while July business was the best in the thirteen years of the company's history. Indications are that August figures will closely approximate those of July.

The India Tire & Rubber Co., Akron, Ohio, announced on August 31 that its production of bus tires had trebled during the sixty days previous.

The Williams Foundry & Machine Co., Akron, Ohio, has taken over the manufacture of the line of rubber working machinery designed by Edward E. Allen & Son of Erie, Pennsylvania. This line includes tubing, insulating and straining machines, vulcanizing presses, etc. Edward E. Allen has had a wide experience in the rubber industry and has long been considered one of the foremost tubing authorities of the trade. Sales will be handled by both Edward E. Allen & Son and the Williams Foundry & Machine Co.

Arthur O. Roberts has joined the advertising staff of the Miller Rubber Co., Akron, Ohio.

C. B. Hudson, formerly in the Goodrich development division, is chief engineer of the Akron Standard Mold Co., Akron, Ohio.

Tire business is booming in Florida, along with real estate, reports G. F. Laughlin, a former resident of Akron, Ohio, and now president of the Royal Palm Rubber Co., of Kelsey City, Florida. He was in Akron recently to purchase equipment for increasing production at his plant, which is the only tire manufacturing concern in Florida.

The Dayton Rubber Manufacturing Co., Dayton, Ohio, specializing in Thorobred tires, reports a record business during the first months of the present year, the figures for July representing approximately a 100 per cent increase over those for July, 1924. The year 1924 also showed a gain of almost 25 per cent as compared with 1923. John A. MacMillan is president and general manager.

The Cooper Corporation, with general offices at Cincinnati, Ohio, maintains a tire manufacturing division at Findlay, Ohio, where Cooper cord tires and other rubber goods are produced, the battery manufacturing division being at Madisonville, a suburb of Cincinnati. Recently another line has been added, the Cooper A-n-B radio battery eliminator.

Exhibitors at the seventh annual convention and exposition of the American Society for Steel Treating, held September 14 to 18, 1925, at Cleveland, Ohio, included the following: the Bristol Co., Waterbury, Connecticut; the Cooper-Hewitt Electric Co., Hoboken, New Jersey; the Roessler & Hasslacher Chemical Co., New York, N. Y.; and the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.

The Ra-Clare Rubber Co., Inc., specializing in the manufacture of toy balloons, has moved its factory from Delaware to Newark, Ohio. At the new location additional equipment has been installed, while the plant capacity is double that of the old factory. Charles A. Breyley is president.

The Hammond Rubber Co., Massillon, Ohio, specializing in the manufacture of toy balloons, has increased its capital from $10,000 to $25,000. S. W. Hammond is general manager of the concern.

E. H. Nahm, well known to the rubber trade in the Middlewest, has made his permanent address at 333 Fernwood Drive, Akron, Ohio. He is connected with the rubber service department of The Roessler & Hasslacher Chemical Co., 709 Sixth avenue, New York, N. Y.

Railway Locomotive Replaces Disabled Boiler

During the heighth of production, one of the large boilers of The Pharis Tire & Rubber Co., Newark, Ohio, recently broke down. In this crisis a railway locomotive was secured and connected to the steam mains of the factory so that its manufacturing was continued at the maximum point. It is believed that this is the first time a locomotive was used for such a purpose.

Locomotive Assists in Making Pharis Tires

The Pharis company is now erecting a new two-story building which will measure 60 by 200 feet. With its completion, the plant will produce 3,500 tires a day and the same number of inner tubes. Carl Pharis is general manager.

J. V. Aguirre, for five years export manager of the Mason organization, is now in charge of export distribution for The Star Rubber Co., Inc., Akron, Ohio. Mr. Aguirre has traveled extensively through the West Indies, Mexico, and South America.

C. V. Hewitt, for fifteen years associated with the Goodyear organization, is now covering the state of Ohio for The Star Rubber Co., Inc., Akron, Ohio.

Firestone Celebrates Twenty-fifth Anniversary

In celebrating on August 3, 1925, the twenty-fifth anniversary of the establishment of the Firestone Tire & Rubber Co., Akron, Ohio, President Harvey S. Firestone, can point, with pardonable pride, to a remarkable record of achievement.

He began in 1900 with a capital of $50,000 in a small factory building in South Akron, and a force of only twelve men, making

Harvey S. Firestone and His Five Sons

carriage tires only. The company soon found it necessary not only to increase its capital, but also to enlarge its plant. Additional buildings were erected in 1904, 1905, 1907, 1908, and 1909, until in 1924 the factory's floor space included 2,399,400 square feet, with an output estimated for 1924 at 6,627,973 automobile casings.

The company's subsidiary plants include the Firestone Steel Products Co., Akron, Ohio, said to produce the largest number of rims of any factory in the world; the Firestone Tire & Rubber Company of Canada, Ltd., Hamilton, Canada, with a capacity of 3,000 tires and tubes daily; and the Firestone-Apsley Rubber Co., Hudson, Massachusetts, having over five acres of floor space, and a capacity of 25,000 pairs of footwear daily. Still other plants include the Firestone Cotton Mills, Fall River, Massachusetts, with a floor space of eight acres; and the Firestone warehouse at Singapore, Straits Settlements, a large washing and refining plant with storage capacity for 5,000 tons of rubber.

Mr. Firestone is well known through his activities in promoting good roads throughout the country, the Harvey S. Firestone University Scholarships, and the Ship-by-Truck movement which was established through his efforts. He is now organizing the Firestone-Liberia Rubber Co., to plant one million acres of Hevea in Liberia, the pioneer attempt to supply American manufacturers with adequate supplies of rubber.

Convention of General Salesmen

In an address to salesmen of the General Tire & Rubber Co. attending the annual convention recently held in Akron, Ohio, President William O'Neil predicted that sales for 1925 would be in excess of $18,000,000, compared with $13,000,000 in 1924. He set $25,000,000 as the goal for next year.

President O'Neil said spring datings would be abandoned, except in particular cases. No change in the present prosperous condition in the rubber industry is anticipated, and except for a slight letup in January and February, unusually heavy sales are likely to be made. He told of the company's plans for increasing production by use of new factory additions now being constructed. There have been periods in the past when General refused new business owing to the heavy demand from its old dealers.

Others who spoke at the convention were: W. E. Fouse and C. J. Jahant, vice-presidents; Secretary T. F. O'Neil, S. S. Poor, sales manager of the New York territory; Howard F. Smith, sales manager of the western territory, and A. B. Stiller, advertising manager.

District managers attending were: W. G. McGruden, Chicago, Illinois; J. B. Cudlip, Kansas City, Missouri; C. H. Boyer, San Francisco, California; D. S. Fitzgerald, Dallas, Texas; and H. D. Taylor, Atlanta, Georgia.

President of Servus Rubber Company

Judson J. Adams, president and general manager of the Servus Rubber Co., Rock Island, Ill., which is the only company in that state manufacturing canvas rubber soled and rubber footwear, was born at Dresden, Ohio, in 1880. He attended the public and high schools and received his higher education at the Ohio State University.

In 1903 he accepted a position with the Henry C. Werner Co., wholesale distributers of boots, shoes and rubbers. During the ensuing year, he accepted a position with the Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut, and served that company in various capacities during the following twelve years, gaining a very thorough knowledge of the business from the factory to the finished product as sold by the retail merchants. In 1915 his marked executive ability and conscientious efforts were rewarded by his advancement to the position of western manager, with entire jurisdiction over that company's affairs from the territory north and south from the eastern Ohio boundary, with distributing houses in Chicago, Minneapolis, Kansas City and San Francisco. In February of the following year he was elected treasurer of the Beacon Falls Rubber Shoe Co., Chicago, Illinois.

Judson J. Adams

Meanwhile, he had come to appreciate the distributing advantages of the great central market for canvas rubber soled and rubber footwear, and following the death in 1921 of Tracey S. Lewis, president of the Beacon Rubber Shoe Co., he began the organization of the Servus Rubber Co., a million and a half corporation, in Rock Island, Illinois.

Among his early associates and financial supporters were Lawrence B. Icely, president of Thos. E. Wilson & Co. of Chicago, who is now vice-president of the Servus Rubber Co., and William T. Church of the law firm Church, Haft & Robertson of Chicago, who is now secretary of the Servus Rubber Co. The stock in the new company which was not subscribed for by the firm's organizers and friends was quickly taken by investors in Rock Island, Chicago and New York.

Mr. Adams has an uncanny ability to pick the right men for executive positions; witness his choice of John T. Crowley, manufacturing director, Irvin S. Rauch, general sales manager, Alexander W. McKee, office manager, and Myron D. Ettla, export and advertising manager. With the aid of this organization, the first unit of a new and modern factory costing over $300,000 was completed in 1923. It was immediately placed in operation with no indebtedness and sufficient cash capital for its requirements. The first shoes manufactured were sold before the materials for the patterns had been cut, and all subsequent production has been sold in advance of completion.

The original plant comprised a three-story brick building 310 by 60 feet, with boiler room, storage warehouse and cement house separate, providing a combined floor area of nearly 60,000 square feet and a capacity of 5,000 pairs of canvas rubber soled and rubber footwear daily. Today over 500 men and women are employed in the plant, and production exceeds 7,200 pairs of shoes daily. The firm's sales channels extend from one end of the United States to the other, and to foreign countries. To still further increase the capacity to meet the ever-growing demand of a steady market, a second three-story unit 164 by 84 feet, with the connecting areaway 20 by 70 feet, has been completed and equipped at a cost of approximately $225,000.

To organize, finance, build and equip such a plant in two years, and in two years more to secure such a volume of business is an achievement worth while, indicating the keen perception, boundless energy and organizing ability of Judson J. Adams.

He is a member of various Masonic bodies, including the Mystic Shrine, the Illinois Athletic Club of Chicago, the Rock Island Arsenal Golf Club, the Rock Island Club, and many other social organizations.

The Rubber Trade in the Midwest

Myron D. Ettla, export manager of The Servus Rubber Co., Rock Island, Illinois, has, in the interests of his organization, recently sailed for Europe, where he will visit England, Holland, and Germany.

J. H. McCruden and J. L. O'Donnell, formerly connected with the Victor-Springfield Tire Co. and the General Tire & Rubber Co., are now associated with the Glenn Tire Co., St. Louis, Missouri, the distributer for that city of India tires. Mr. McCruden was at one time in charge of the Chicago branch maintained by the Victor-Springfield organization.

The Standard Four Tire Co., Keokuk, Iowa, is operating its factory both night and day, while sales are at present the largest in the company's history. A. E. Verner is general sales manager.

R. L. Terry has been appointed manager of the Kansas City branch maintained by the Mohawk Rubber Co., Akron, Ohio, while G. I. Windle is in charge of the company's newly opened branch at Tulsa, Oklahoma.

H. L. Whitesell has been appointed special representative in Kansas for the Star Rubber Co., Akron, Ohio.

The Marion Rubber Co., Marion, Indiana, has purchased the rubber, tennis, and felt slipper jobbing business of the Hirth-Krause Co., 16-20 Iona avenue, Grand Rapids, Michigan, and will continue operations at Grand Rapids. The newly acquired establishment will represent the fifth division maintained by the Marion company, the others being located at Marion, Indiana; Columbus, Ohio; Detroit, Michigan; and Chicago, Illinois. Goodyear rubber gloves are carried, and rubber boots and shoes, tennis and sport shoes, etc. Executives include: G. P. Butterworth, A. P. Butterworth, and H. W. Lushey.

F. C. Herman is president and treasurer of the newly organized Gillette Rubber Co., Eau Claire, Wisconsin, recently sold at receivers' sale. R. W. Hutchins is vice-president and assistant secretary, and I. T. Gilruth is secretary of the new concern.

DENMARK AS MARKET FOR AMERICAN TIRES

American tire exports to Denmark have been increasing steadily in recent years, the present year proving no exception. For the first half of 1925 Denmark has taken pneumatic casings to the value of $466,745; inner tubes, $63,407; and solid tires, $18,488, a total of $548,640. The corresponding total for the entire year 1924 was $699,690, imports of American casings for that period being estimated at $601,378; inner tubes, $64,861, and solid tires, $33,451. Totals for the years 1923 and 1922 were respectively $647,158 and $553,089.

The Rubber Trade on the Pacific Coast

General conditions continue good, despite the seasonal slow-up in tire production, averaging about 10 per cent below the mid-summer peak. While one automobile accessory supply company with 125 stores on the coast, announced a drop in the price of tires, the increases recently made by tire manufacturers on the Coast and the prices fixed for distributers of eastern and mid-western concerns, indicate that tires will remain unchanged for perhaps a couple of months. If crude rubber does not become cheaper meanwhile, it is likely that prices may advance 5 or 10 per cent.

The larger manufacturers of mechanical rubber goods announced price increases last month ranging from 10 to 12 per cent following similar and larger increases made by eastern competitors several months ago. Further changes are said to be improbable for a long time to come, unless the crude situation changes radically.

Complaint is made by some tire manufacturers that advertising by eastern tire makers advising dealers against heavy purchases caused a considerable cut down in sales in the Pacific territory; and doubt is expressed if the campaign will redound ultimately to the advantage of the eastern concerns.

The field of tire company promotion appears to be deserted. This hesitancy in starting new rubber companies is due to the failure of many promotions to make good, dearness of crude material, and the realization of investors that new concerns cannot compete with older concerns, equipped for quality and quantity production. An effort is being made, however, to promote some rubber reclaiming enterprises, the favorable arguments being: a great amount of cheap rubber scrap; many rubber manufacturers to be supplied; and low production costs.

A considerable demand is noted for rubber-insulated wire with a decided stiffening in price, and all due to building activity and present and prospective extension of the hydro-electric industry. Makers of rubber heels and shoes report good business, but sharp competition in prices. Many large dealers in rubber goods are venturing into the rubber flooring business in a small way; and representatives of eastern companies making flooring material report increasing popularity of their products.

At the Goodyear plant in Los Angeles casing production is slightly below 6,000 daily, with tubes averaging 6,400. This output is expected to be maintained for the remainder of 1925, and the management is confident that the present year's business will show a marked gain over that of 1924. Vice-President and General Manager Albert F. Osterloh has been spending much time lately looking after company affairs in the upper coast cities, with H. D. Thompkins, special representative of the parent Goodyear company of Akron. During the past month five carloads of rubber arrived at the factory, being part of a shipment from the Far East. The purchase was made early in the spring, the company's practice being to maintain a six months' position on crude rubber.

The Pioneer Rubber Mills, San Francisco, California, and of which George S. Towne is president, reports business better than ever. The factory at Pittsburg is working night and day, and the output includes light and heavy hose, belting, packing, heels, general mechanicals, and hard rubber battery jars. Delivery has just been made of 10,000 feet of 3½-inch fire hose to the City of Los Angeles, and an order has been received for 25,000 feet of 2½-inch fire hose from the same source.

To provide for the storage of rubber-insulated and other wire, a $250,000 cement and steel warehouse is being erected for the J. A. Roebling Sons Co., Trenton, New Jersey, at 16th street and Carolina avenue, San Francisco, California.

The United States Rubber Co.'s San Francisco branch reports total sales for September much above the same month in 1924. While increases have been good in all lines, tires have been a particularly strong feature. Division Manager J. B. Brady has

recently been making a personal study of trade conditions in the Northwest. Mr. Brady has recently had as his guest George H. Mayo, one of the company's executives from New York.

The Sound Rubber Co., Tacoma, Wasihngton, is making balloon tires in the smaller sizes and is preparing to manufacture the larger sizes later in the year. Manager E. J. Hanson reports a well-sustained demand for standard cord tires in all sizes, and a steady improvement in business despite the handicap of higher prices.

Messrs. Samuel Steere, textile expert; C. T. Hutchins, assistant manager of the advertising department; and O. C. Spinchcombe, manager of repair material sales, all of the Goodyear Tire & Rubber Co., Akron, Ohio, have been recent visitors on the Coast.

George W. Greene has recently been appointed superintendent of the Coast Tire & Rubber Co., Oakland, California.

Million Dollar Goodyear Addition

A million-dollar addition to the plant of the Goodyear Tire & Rubber Company of California, Los Angeles, California, has been authorized by the directorate. Construction will begin at once. The structure will be, like the remainder of the plant, of brick and reinforced concrete, will cover 100 by 200 feet, and have five stories and a mezzanine floor, thus adding floor space which will total 1,000,000 square feet; and providing for the employment of about 1,000 additional operatives. It is stated that the capacity of the present plant is fast reaching its limit.

M. S. Kelley, comptroller, treasurer, and one of the directors of the Goodyear company, as also of the subsidiary Goodyear Textile Mills, has resigned his official positions to become assistant manager of the Goodyear Export Co., Akron, Ohio. W. S. Downs will succeed him as comptroller and treasurer of the California Goodyear concerns. Regular quarterly dividends of 1¾ per cent, payable October 1, have been declared on the preferred stock of the two concerns, as well as a similar deferred dividend on the tire company's preferred.

The Rubber Trade in Canada

It is interesting to note that since April 1 the price of 30 by 3½ tires has advanced from $9.45 to $12, an increase of over 20 per cent. Prices on rubber heels and jar rings have been advanced, and business is good at the recently advanced quotations on rubber goods of all kinds.

It is said that the old waterproof is coming back. One manufacturer is preparing a representative line of waterproofs for spring, rubberized in England and manufactured in Canada.

The eighth annual convention of the Canadian Bicycle Dealers Association was held recently at Hamilton, Ontario. Prominent speakers included Earl Rogerson, sales manager of the bicycle division of the Dunlop Tire & Rubber Goods Co., Ltd., Toronto, also G. Evans, of A. Schrader's Sons.

John Myles, vice-president of the Columbus Rubber Co., Ltd., Montreal, is on his annual inspection of Western Canada branches. He was in Winnipeg quite recently.

At the recent annual meeting of the Automotive Industries of Canada, C. H. Carlisle, vice-president and general manager of the Goodyear Tire & Rubber Co. of Canada, Ltd., was reelected vice-president. Mr. Carlisle and W. A. Eden, Canadian Consolidated Rubber Co., Ltd., were elected to the board of directors.

The Independent Rubber Co., Limited, with head office at Guy and St. James streets, Montreal, Canada, has opened a new footwear distributing branch at 288 McDermot avenue, Winnipeg, where its products will be carried for the convenience of the retail trade. Thomas J. Spence, formerly associated with The Columbus Rubber Co. of Montreal, has been appointed manager of the new division.

N. M. Lynn, general sales manager of the Ames Holden-McCready Rubber Co., Ltd., Montreal, reports good business from the 27 rubber salesmen now covering their respective territories.

The Miner Rubber Co., Ltd., is now occupying handsome offices on St. Peter street, Montreal, the whole building being remodelled to meet the company's requirements.

Goodrich Hi-Press rubber footwear is being regularly produced at the Goodrich factory, Kitchener, Ontario. All classes of Hi-Press footwear are ready for distribution to the Canadian public through the footwear trade.

The Riley Engineering & Supply Co., 360 Dufferin street, Toronto, and 3 Nicholas street, Montreal, will be the distributer throughout the Canadian territory of goods manufactured by the Flexo Supply Co., 104-106 South Main street, St. Louis, Missouri. The latter organization specializes in Flexo Kant Leak pipe joints for rubber machinery.

Annual Fall Convention of M. and A. M. A.

The annual fall convention of the Motor and Accessory Manufacturers Association will be held October 7 to 10 at the Mount Royal Hotel, Montreal, Canada. At the various sessions a large attendance is expected, and an interesting program has been prepared.

Canadian Tire Exports

During the month of June, 1925, Canada exported 126,934 pneumatic casings, value $1,514,708; 111,150 inner tubes, value $188,257; and 8,717 solid tires, value $217,413. The leading markets for these goods included the United Kingdom, which took casings valued at $151,776; inner tubes, $13,016; and solid tires, $35,009. Other important customers were in the following order: Argentina, Australia, Japan, Denmark, Sweden, and Mexico.

RUBBER IN HYDRAULIC BRAKE CONSTRUCTION

In the September issue of *The Journal of the Society of Automotive Engineers*, H. E. Maynard, author of an article entitled "Development Difficulties and the Design of Hydraulic Brake Units," reviews the attempts to find a material that would resist high temperatures, that would be comparatively non-compressible, and that would provide a seal for pistons in cylinders, the result being the final adoption of a special rubber compound that is apparently satisfactory in all respects.

Several illustrations show the use of rubber in the design of enclosed wheel-cylinders, where a rubber cup is attached to the piston, while the cylinder itself is protected by a rubber boot. Still another represents a flexible hose connection from the tubing on the frame to the wheel cylinders, and where, in the hose construction, rubber is used for both the inner and outer coverings.

According to the author, the rubber cups "form a perfect seal at all times and continue to function after being subjected to the highest temperatures that are employed in drying the paint in the process of car production or that are generated in the brake cylinders by use of the car on the road. Moreover the material has the toughness and resistance to wear that give it long life."

AMERICAN TIRE AND TUBE EXPORTS

Exports by American manufacturers of pneumatic casings for automobiles totaled during the twelve months ended June, 1925, 1,444,649, value $17,117,350, as compared with the corresponding record for the year previous of 1,077,489 casings, value $12,937,712. Similar exports of inner tubes during the 1924-25 period reached a total of 1,268,934, value $2,228,219, as against 949,814, value $1,738,182, for the twelve months ended June, 1924. A falling-off is however noted in the 1924-25 shipments of solid tires, these numbering 101,716, value $2,603,636, as against 103,983, value $2,696,958, for the preceding twelve months. Total exports of automobile tires and tubes were estimated as having a value for the 1924-25 period of $21,949,205, as compared with $17,372,852, the total for the twelve months preceding.

CUSHIONING QUALITY OF TIRES

Tire and truck impact tests have been in progress for nearly two years at the Arlington Experimental Station near the city of Washington, D. C. A progress report of this work has recently been prepared by the Bureau of Public Roads describing the special accelerometer used for securing an autographic record of the impact and cushioning effects.

The tire offering the best cushioning qualities is the one that will cause the wheel to come to rest in its vertical motion in the greatest distance by reason of its smaller deceleration value. These cushioning qualities of the different tires are dependent not only upon their inherent characteristics, but also somewhat upon the character of the obstruction that they may strike.

The horizontal speed with which the truck wheel strikes an obstruction, or irregularity, in the road surface and the load it carries are also influential factors. The cushioning quality of any particular tire is also somewhat affected by the tire temperature.

A few of the results indicated by the tests made show as follows:

1. The magnitude of the deceleration of a truck wheel may be as high as 2,500 feet per second in the case of badly worn tires.
2. Wide tires give higher impact-forces than narrow tires for the same load.
3. The vertical thickness of rubber available for cushioning in solid and cushion tires is a very important factor. A badly worn tire may give an impact force of seven times that of the static load.
4. An unevenly worn or a damaged tire may easily produce the effect of a very rough road both in the force the road must withstand and the equal and opposite force withstood by the truck.
5. It is, of course, self-evident that the cushioning qualities of tires and the impact forces developed by traffic, are of small value and consequence and not capable of being measured on really smooth pavements. It is only on rough and wavy pavements that these qualities and force factors are of sufficient magnitude to be compared.

SURVEY OF TIRE DEALERS' STOCKS

The Rubber Division of the Department of Commerce is making a third semi-annual survey of tire dealers' stocks as of October 1, 1925. The average number of tires held by dealers reporting October 1, 1924, was only 53.6 while the corresponding spring stocks of 1925, represented in the second semi-annual survey, averaged 62.2 tires per dealer. The uncertainties of the crude rubber situation should render the third survey more valuable than the previous ones. More than 100,000 questionnaire forms will be mailed to tire dealers throughout the country, who should give this matter prompt attention.

SHOES MADE FROM OLD TIRES

Although the peasants, in all countries having peasantry, are often very poor, they are not without inventive resource when pressed by needs, as the illustration testifies. This picture represents a sample shoe, fashioned by the Spanish peasants individually, from stock cut from old tire casings. In order to avoid the Spanish import tax on scrap tires, such tires are imported cut into pieces of suitable lengths for fashioning into crude shoes. Plies stripped from the side walls furnish the stock for toe cap straps and heel counter. The various parts are securely fastened by staples to the tire tread section serving as a shoe bottom. The ankle strap passes through slits in the rear of the heel piece and instep strap and serves to secure the shoe in place upon the foot. Shoes of this construction unquestionably afford "more miles per dollar" than any other line of rubber shoes. Shoes of similar construction are made and used by natives in certain parts of China. Likewise, boots made on a similar plan, from scrap tires, are used by the native blacks in the Rand mines of South Africa.

Spanish Peasant's Shoe

FRENCH IMPORTS OF AMERICAN TIRES

During the first half of 1925 France has imported from the United States pneumatic casings to the value of $128,029; inner tubes, $15,142; and solid tires, $2,300; a total of $145,471, as compared with $190,114, the corresponding value for the entire year 1924. Such imports have however fluctuated greatly, the 1923 value for tires and tubes being only $90,135, as against $289,946, the total estimate for the year 1922.

Inventory—Production—Shipments of Pneumatic Casings—Inner Tubes—Solid Tires—Rubber and Fabric Consumption

	High Pressure Pneumatic Casings					
	Cord			Fabric		
1925	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
January ...	3,562,701	1,999,410	1,618,169	1,498,309	1,009,201	908,260
February ..	4,108,082	1,996,488	1,458,136	1,710,425	944,168	718,626
March	4,369,673	2,000,939	1,708,352	1,836,228	738,625	616,350
April	4,035,061	1,816,641	2,012,794	1,700,699	562,449	661,907
May	3,610,304	1,815,969	2,266 073	1,461,301	480,339	714,728
June	2,870,827	1,894,704	2,610,409	1,033,840	439,397	869,058
July	2,502,055	2,281,645	2,479,160	658,814	447,145	809,290

	Balloon Casings			Solid and Cushion Tires		
1925	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
January ...	901,031	546,146	563,315	196,774	52,464	44,814
February ..	877,851	740,106	764,874	191,733	53,058	55,646
March	926,303	1,217,367	1,168,277	175,010	56,751	69,833
April	1,080,594	1,626,369	1,448,974	166,389	66,059	70,950
May	1,386,840	1,803,607	1,484,877	156,175	75,473	86,785
June	1,527,684	1,729,121	1,573,062	153,098	85,036	90,942
July	1,654,629	1,561,806	1,434,981	152,587	75,228	74,715

	High Pressure Inner Tubes			Balloon Inner Tubes		
1925	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
January ..	7,756,467	4,171,812	3,643,841	920,728	585,243	528,533
February ..	8,815,514	3,977,721	2,989,606	951,539	776,855	738,734
March	9,540,993	3,895,688	3,120,624	1,135,649	1,354,434	1,162,910
April	8,726,603	3,259,534	3,556,258	1,486,546	1,879,007	1,471,976
May	7,535,418	3,225,218	4,513,460	1,840,425	1,908,973	1,516,774
June	5,910,609	3,566,099	5,173,477	1,896,178	1,640,465	1,600,410
July	4,677,647	4,297,495	5,357,295	1,798,919	1,360,719	1,497,747

	Cotton and Rubber Consumption in casings, tubes, solid and cushion tires	
1925	Cotton Fabric Pounds	Crude Rubber Pounds
January	12,310,822	42,170,869
February	13,363,986	41,720,847
March	15,040,609	46.365,630
April	14,902,337	48,154,633
May	14,984,561	47,639,298
June	15,840,498	53,3o6,781
July	16,013,761	53,197,164

Compiled from Rubber Association Figures.

Uniform Output from Widely Separated Rubber Plants

How Goodyear Branch Plants Are Managed to Function as One with a Uniform Product

Large manufacturers engaged in national merchandising are finding it increasingly advantageous to operate branch plants in various parts of the country. There are notable instances of the practice in the rubber industry. P. W. Litchfield, first vice-president of the Goodyear Tire & Rubber Co., Akron, Ohio, in *Factory* tells the numerous advantages of branch plants and how uniform output is obtained in the Ohio, California, and Canadian plants of his company. A brief abstract of the article follows:

Branch Plant Advantages

Greater economy and security in meeting keen local competition summarize the advantages. Reducing the freight charges and facilitating distribution are the principal considerations. Transportation costs are higher on finished goods than on raw materials, and it costs a dollar a hundredweight, more or less, to ship goods from east of the Mississippi to the Pacific Coast. Canadian branch plants save not only the freight but an import duty of 37 per cent of the selling price of tires, for example.

Inter-plant competition effects lower costs, either through more production at the same expense, or the same production at less expense. More time and labor-saving methods are discovered in three plants than in one. Those approved on testing out become standard practice in all three factories the next week.

Finally, branch plants divide risks and make it easier to meet emergencies of various sorts. Should fire destroy one of the plants, for example, the other two could make shipments until it could be rebuilt.

Essentials of Successful Branch Operation

A branch plant will be not an asset but an added expense unless it can be made independently economical at the start. It must be possible to turn over to it enough business to make it fully operative and eliminate idle time. The parent plant must be so thoroughly organized that a corps of specially trained key-men —executives, inspectors and experimenters—may be transferred to operate the branch plant with the same skill, methods and standards learned in the mother plant. And it must be so thoroughly systematized that the branch may be given an adequate budget of money within which to live.

How a Uniform Product is Insured

A uniform product from all plants is of prime importance. Only by uniform quality throughout the country wherever rubber goods are bought or manufactured can public confidence in nationally advertised goods be maintained. Key-men in each branch, selected and trained in the parent plant, is the first step. Each plant is given uniform machinery, tested compounds and identical specifications. Time studies are standardized minutely, accurately and corrected monthly. All plants are taught to "talk" in the same language and must keep in constant touch or they will drift apart.

Every day the Goodyear home factory office sends letters and telegrams to the two branch plants. Every day it receives 30 to 50 letters in duplicate from these plants. A complete daily report in code brings up-to-the-minute developments and gets action on pressing problems. Every month statistics of the most thorough kind are exchanged. Periodically the vice-president in charge of operations receives full reports from each plant, together with actual samples of the products made. Executives in each of the three plants make two or more visits a year to the other plants to tie the plants even more closely together.

Tire uniformity, for example, is maintained by a rigid system of tests. Every week a full line of tire sections is shipped from each of the three plants to the other two plants. These tire sections are cut and analyzed, so that any variation from standard is soon detected. In Akron the firm's tires are tested against those of its competitors. A fleet of "test cars" drives about 400 miles a day to see how quickly tires wear out and whose wear out first. All results of such tests are promptly forwarded to the two branch plants.

Inter-Plant Relations Man Securing Tire Data

The Inter-Plant Relations Department

Most of this contact work is handled by an inter-plant relations department at the parent factory in Akron, Ohio. It acts as the personnel representative of the California and Canadian plants, and as a clearing house for the transmission of new information back and forth so that all three plants will function as one. It also distributes incoming orders for domestic shipment and export, to the plant most favorably located or equipped to handle them, freights and duties considered, and sometimes switches orders to the plant that needs the business most.

Technically trained men are given the run of the parent plant, and because of their intimate acquaintance with its workings understand the needs of the branch plants. They can get access to anybody in the factory and are treated with the same promptness and given the same information which would be given to branch executives personally, for they are ambassadors representing the branch plants.

The inter-plant relations department determines the official best equipped to solve each problem as it is received and gets his answer, also the opinions of men higher up if the matter seems to merit more thought. Every question and suggestion gets as prompt and thorough consideration as if the writer were present in person. This gives outside executives encouragement and confidence. If a man has an idea for a new rubber product, machine, or process that looks promising, the experimental department builds it and tests it out thoroughly, adopting or rejecting it on its merits. Giving every man's ideas, no matter where they may be found, the full and fair scrutiny to which they are entitled is the Goodyear method of incorporating the best brains of its organization into its products.

Many minor problems, such as machinery repairs and differences in cure, which occur daily, must be settled locally and the local superintendent is competent to handle such emergencies. But on more permanent problems, such as plant or machinery rearrangement to save space or expense, each plant writes to Akron. Wage scales and all questions of policy are referred to the main office.

Inter-Plant Relations Man in Each Branch

At each branch plant the factory officials meet once a day to act on the day's needs and problems. An inter-plant relations man stationed there attends and always knows what is going on. All letters from the branch to the parent plant at Akron, Ohio, are routed through his office so that duplication of inquiry, suggestion and information may be avoided. Letters are mailed in duplicate and a carbon of each is kept. When a reply is received, both question and answer are filed together in the branch inter-relations department.

This department also coordinates the firm's purchasing for all its plants. Every month each branch furnishes a review of its purchases and a statement of all stock on hand. Overstocks of any material are promptly removed by transfer to another plant or by order to absorb the excess material. Contracts for rubber, cotton fabric, and compounds are made on the basis of next year's needs, on a general knowledge as to what each plant will require. Details are sent to each plant so that requirements can be drawn against each contract. Overbuying is avoided to a great extent by the policy of working ahead five or six months on all changes, of which each plant is promptly advised.

As a clearing house of information this department saves much trouble and expense by keeping all plants advised of the rise and fall of customers' domestic and foreign sales or changes in distribution methods; also by routing new business to offset occasional cancellation of orders and maintain production, and by furnishing detailed specifications and instructions for the manufacture of new products and the installation of new machinery. Through this department cartons, printed matter and other supplies may be purchased either by the parent or branch plant from standardized samples, whichever can obtain them more cheaply, transportation considered.

Standardized Time Studies and Budgets

Time studies are worked out and standardized in the parent plant and then sent to the branches, where superintendents can get their piece-work rates almost without experimenting, because they know how each operation is priced in Akron.

Each plant operates on a budget. Every month each superintendent reports the output of his plant for the following month and specifies the amount of materials and wages. At the end of the month actual costs are compared with the budget and the comparative figures of each plant are checked against each other. Having three plants, three budgets can be worked out with three times the carefulness that would be possible with one plant.

If it becomes necessary to make radical changes in production plans quickly, the order to do so is invariably accompanied by a full explanation of the necessity for them in order that the branch officials may act understandingly, in full confidence.

Keeping the Whole Organization a Unit

Much as the inter-plant relations department can accomplish in an ambassadorial capacity, personal contact between executives is also necessary. Each plant's executives must know the leading men in the other two plants and work with them. When one man writes to another he must "see" and know that man.

The important officials of the California and Canadian plants visit Akron for a week or two weeks at least twice a year to meet and confer with the executives of the parent plant and observe factory practice. Every year company officials visit the branch plants two to four times, and the heads of all factory departments in Akron visit them at least once. Men often talk what they will not write. Intimate views and ideas are thus exchanged and small problems are solved before they become big. Worthy men are encouraged and promoted. The whole organization is kept as a unit with one purpose, one set of ideals and one head.

The Value of a Monthly Publication

Many matters of more or less importance are not sufficiently pressing to merit a place in the daily telegrams or even mention in a personal letter. Such matters, numbering hundreds, are cited in a monthly review published by the inter-plant relations department to the executives of all the plants. It not only mentions changes in specifications, new developments in time studies, but gives such suggestions, for example, as how the Canadian plant is saving $1.28 in the cost of crating a set of Ford tires for shipment. Through its brevity, clearness, and almost omniscience it has helped in no small way to maintain a unified organization in three distant states.

ARGENTINA'S INCREASING IMPORTATIONS OF AMERICAN TIRES

Argentina continues to be one of the leading markets for American tires, taking during the first half of 1925 pneumatic casings to the value of $975,588; inner tubes, $147,252; and solid tires, $63,344; a total of $1,186,184. It is interesting to compare this total with that for Argentina's similar imports during the entire year 1924, when the figure reached $1,551,422, the corresponding estimate for 1923 being $1,317,512, and for 1922, $1,141,545.

EXPORTS BY AMERICAN MANUFACTURERS DURING THE TWELVE months ended June 30, 1925, of hard rubber goods used in the electrical industries were estimated as being 694,282 pounds, value $255,079. Similar exports for the period of other hard rubber goods totaled 631,041 pounds, value $666,749.

The Rubber Trade in Europe

Great Britain

CONDITIONS in the rubber industry are beginning to show considerable improvement, as rubber prices are at a more stable level, and consumers, particularly American, are taking increasing interest in both near and next year deliveries. The growing steadiness of the market is also having its effect in inducing manufacturers to resume activities and replenish their depleted stocks.

Following these improved conditions, the announcements of considerable dividends by a number of the producing companies are being made, the reports arousing some comments as to the wisdom of such procedure. In regard to interim dividends the *Financial Times* states under an editorial entitled "Rubber Dividend Policy":

With the arrival of the long-awaited profitable period for rubber producing companies, many shareholders are impatient at the ultra-conservative policy of the majority of concerns in unduly delaying the distribution, in the form of an interim dividend, of a proportion of the profits now materializing. Where the business carried on by a company entails the possibility of curtailment of revenue during the latter half of the trading year, the wisdom of distribution of profits earned in the early months of the period becomes debatable.

This argument cannot be put forward by a large number of rubber estates which have made satisfactory forward sales at prices showing handsome profits. A good example has already been given by several companies who have declared interim dividends at rates equal to the total distributions of the previous year.

British Rubber Manufacturing Companies Issue Manifesto

The last to date of a series of manifestos protesting against certain conditions in the rubber industry was issued on August 5 by a number of British rubber organizations who regard the present price of spot rubber and the immediate forward position of the market with apprehension. The manifestos similarly issued were previously prepared by the India Rubber Manufacturers' Association, followed by the Motor Manufacturers' and Traders' Association, and the Institution of the Rubber Industry.

The document under present consideration declares that, "the Stevenson scheme was formulated by a committee of rubber plantation interests; that conduct of the scheme since its inception has been largely in the hands of planters; and that the entire measure was organized on an inaccurate basis, or an estimate of 300,000 tons consumption in 1922, which events showed to be only 78 per cent of actual consumption in that year."

Particularly stressing the statement: "We are greatly concerned with the possibility that incorrect estimates of the present position may prove disastrous," the manifesto continues: "The world's stocks are dangerously low. We estimate that at the present time there is less than four months world's consumption of rubber in stock (inclusive of stocks in manufacturers' hands, rubber growing countries, bonded warehouses and afloat). It is generally acknowledged that normal stocks are eight months consumption. . . .

"The Stevenson scheme provides at its maximum (i.e., 10 per cent) an extra release of only 2,716 tons of rubber per month during successive quarters; or at most 80,000 tons per year. This weight of rubber is equivalent to only two months supply of rubber at the present rate of consumption. Reckoned in terms of probable future consumption of rubber, the unmodified working of the Stevenson scheme will be to accentuate as time goes on the present dangerous shortage. It is computed, for example, by the recent United States Government Survey, consumption will so exceed production that in 1930 the production of rubber will amount to 641,000 tons as against a consumption of 703,000 tons. . . .

"Manufacturers have relied too implicity upon the Legislature carrying out the spirit of the Stevenson legislation. The pivotal point of the scheme is 1*s* 3*d*, and manufacturers had a right and have a right to expect that modification would be introduced into a scheme professing to be framed in the interests of 'stabilization at a fair price.' . . .

"The rubber manufacturing firms who are signatories to this statement employ in the aggregate some 7,000 workpeople. These firms are compelled now to buy on the 'spot' market, or will be obliged to do so in the next few months. The interests of employment at the present time of industrial stagnation would seem sufficient to warrant . . . the introduction of expedients or amendments to the scheme to carry out the expressed intention of the Legislature, viz., a stabilized price for rubber at 1*s* 3*d* per pound."

Institution of the Rubber Industry

With the opening of the fall and winter sessions of the Institution, general meetings of the various branches have been held and plans for the future discussed. A tentative program as issued in the Institution *Transactions* promises some interesting sessions for the 1925-26 season, while the following papers will be read during the meetings for October: "Collective Advertising," by Sir Charles Higham (London Section); "Modern Rubber Factory Layout," by J. Bilsland (Manchester Section); "A Note on Gas Black for Rubber Manufacture; the Effects and Detection of Grit," by G. Gallie; "Tensiles of Cold Cured Rubber," by A. Zeitlin; "Notes on the Development of the Preparation of Raw Rubber," by W. S. Davey (Birmingham Section); and "The Vulcanization of Rubber Latex and its Commercial Application," by Philip Schidrowitz (Glasgow Section).

November papers include: "The Plasticity of Unvulcanized Rubber," by R. W. Griffiths (London Section); and "A Comparison of British and American Manufacturing Methods," by Colin Macbeth (Birmingham Section).

In collaboration with the Institution, the Northern Polytechnic, Hollaway, London, N. 7, is maintaining courses in Rubber Technology in connection with its Department of Chemistry. Both day and evening courses provide instruction in Pure and Technical Chemistry, as well as in rubber Technology. The list of members of the Advisory Committee includes the names of men well-known to the rubber industry.

Standardization of Tennis Balls

At the annual general meeting of the International Lawn Tennis Federation, held in Paris, France, on March 20, 1925, the question of a standard of deformation of tennis balls was discussed. The three members of the international committee then appointed have now completed their work, and state as their unanimous decision that the minimum deformation of a tennis ball shall be 0.290 of an inch, and the maximum deformation 0.315 of an inch.

The amended rule, which shall come into force January 1, 1926, is as follows: "The ball shall be not less than 2½ inches nor more than 2⅝ inches in diameter, and not less than 2 ounces nor more than 2-1/16 ounces in weight. The ball shall have a minimum bound of 50 inches and a maximum bound of 60 inches when dropped 100 inches at a temperature approximating to 68 degrees Fahr., upon a concrete base, and a deformation of not less than 0.290 of an inch, and not more than 0.315 of an inch when subjected to a pressure of 18 pounds applied to each end of any diameter at a temperature approximating to 68 degrees Fahr."

The international committee has also recommended that in all

tests for deformation the machine designed by Percy Herbert Stevens and patented in Great Britain under patent No. 230,250 shall be employed.

British Notes

The directors of the Greengate & Irwell Rubber Co., Limited, entertained at dinner on August 27 more than 300 of the company's employes who had been in their service for twenty years and more, as a part of a celebration to commemorate the seventieth birthday of James Tinto, chairman of the board of directors. After various toasts and addresses, John Haworth, secretary of the India Rubber Manufacturers' Association, presented Mr. Tinto, on behalf of his organization, with a large silver salver, many of the leading English rubber companies being represented as subscribers to the gift.

The Dunlop Rubber Co., Limited, Fort Dunlop, Birmingham, England, has bought out the business formerly carried on by W. & A. Bates, Limited, St. Mary's Mills, Leicester, England. The latter organization has been specializing in the manufacture of tires for cycles.

Under the name of Gutta Percha and Rubber (London), Limited, a new company has been formed to carry on the British business of the Gutta Percha & Rubber Co., of Toronto, Canada. The registered offices of the company are at 4 Southampton Row, London, W. C. 1, and J. S. McMurray will act as the managing director of the organization.

The Rubber and Tropical Trust, Limited, has been registered with a nominal capital of £500,000, the object of the company being to interest itself in rubber and tropical agriculture generally. The directors include men associated with well-known rubber plantations. The secretaries are Messrs. Francis Peek & Co., Limited, 5-7 Eastcheap, London, E. C. 3, England.

Germany

The new import tariff rates just published have been revised in order to assist home manufacture but nevertheless cannot be considered as aiding in giving a monopoly in home trade to any industry. Rubber manufacturers of certain lines are somewhat disappointed. Tire manufacturers wished the prevailing rate of 360 marks per 100 kilos to be raised to 420 marks; in spite of this the duty remains unchanged. Other important items for which the tariff is the same are: inner tubes, 240 marks per 100 kilos; hose, 120 marks; footwear, 210 for unvarnished and 300 marks for varnished; hard rubber sheets and rods, 10 marks, and hard rubber tubes, 40 marks.

Among the items for which increased duties are to be levied may be noted:

	Marks per 100 Kilos	
	New Duty	Old Duty
Rubber solution	5	3
Rubber solution, for retail trade	30	3
Soft rubber dough, sheets thereof, unvulcanized sheets combined with wire	15	5
Cut sheet (patent sheet)	20	8
Rubber thread	50	20
Rubber thread covered with fabric, except silk	80	40
Belting	60	50
Rubber goods combined with silk	360	180
Rubber goods combined with other fabric	180	100
Other soft rubber goods not elsewhere mentioned	80	40
Hard rubber for dental purposes	150	100
Other hard rubber goods	60	45

As the foregoing shows, rates on the most important rubber goods remain the same.

Imports and Exports

During the first half of 1925, Germany imported 221,631 quintals of raw rubber, valued at 80,035,000 marks, as compared with 106,339 quintals, value 22,801,000 marks for the corresponding period of 1924. The Netherlands and British East Indies together supplied almost 190,000 quintals while only 15,619 quintals came from Brazil.

Imports of manufactures of rubber showed a considerable increase, totals being 3,249 quintals, value 1,802,000 marks and 10,354 quintals, value 6,542,000 marks for 1924 and 1925 respectively. Among the most important increases were tire casings, 1,302 quintals instead of 211 quintals; rubber footwear, 229 quintals instead of 35 quintals; belting, 171 quintals against 15 quintals and packing, 296 quintals against 120 quintals.

Total exports of manufactured rubber rose from 75,552 quintals, value 33,466,000 marks to 78,295 quintals, value 44,045,000 marks. Shipments of tires and casings for all vehicles amounted to 13,763 quintals as compared with 13,906 quintals; tubes, 4,281 quintals against 4,864 quintals; belting, hose and packing, 10,511 quintals against 9,368 quintals; footwear, 1,882 quintals against 2,099 quintals.

Higher Prices

The continued rise in crude rubber has caused the manufacturers of technical soft rubber goods to make further increases in the prices of certain lines. On June 7 the rates had been augmented by 30 to 60 per cent; the latest increases, as from July 26, range from 50 to 110 per cent. At the same time the minimum prices of a number of staples of the cheapest kind have been lowered.

Manufacturers continue to have difficulty in convincing dealers of the necessity for the higher prices. Most of the dealers are poorly informed regarding the crude rubber market, and badly garbled notices in certain daily papers do not help to make matters clearer. Thus it was made to appear as if spot rubber had fallen considerably, whereas prices actually referred to 1926 deliveries; while in other cases quotations were given in shillings and guilders, without the necessary explanation that these were per pound and per half-kilo, respectively, and not per kilo (kilo = 2.2 pounds). Small wonder, then, that some dealers protested to manufacturers regarding what appeared to be uncalled for raising of prices.

German Notes

The death of Herr Adolf Varwerk, head of the rubber firm Varwerk & Lohn, is reported. The deceased was 73 years old. He was a man of extraordinary business insight and energy.

The Harburger Gummiwaren-fabrik Phoenix, Harburg, a E., announces a new model rubber boot, the "Narwal." This boot is entirely of rubber and is to be worn over the leather shoe. It is warmly lined, has a thick rubber sole, broad heel and is fastened by means of four strong buckles.

France

The Para-France S. A. capitalized at 1,500,000 francs, with headquarters at 15 rue Valentin-Hauy, Paris, has recently been formed to buy, sell, work and reclaim rubber, leather and their derivatives.

Etablissements Théophile Michelin, S. A., is a new firm with capital of 1,000,000 francs, formed to exploit rubber in all its applications. Offices are at 58 rue Gide, Levallois-Perret.

The Société Francaise Treugolnik, has moved its headquarters from Levallois-Perret to 3, rue Chauveau-Lagarde, Paris.

Exports of all kinds of rubber tires and tubes during the first half of 1925 aggregated 12,631,400 kilos estimated to represent 971,200 pieces. In Europe, France's best customers for tires, were Great Britain, Switzerland and Belgium, of which each took over a million kilos. Spain, Italy, and the Netherlands also took fair quantities and comparatively important amounts went to the British colonies—particularly Australia, and to Algeria, Morocco, Argentina, Brazil, and French Indo-China. The United States appears on the list with 259,600 kilos to its credit.

Austria

Despite great difficulties caused by the economic crisis in Austria and greatly increased duties in certain importing countries which had been among the firm's chief markets, the Semperit Oesterreichisch-Amerikanische Gummiwerke A.-G., reports fairly satisfactory business. The profit for the past year amounted to 19,312,469,113.42 kronen.

Sweden

Imports of crude rubber into Sweden during the first half of 1925 came to 868,304 kilos as compared with 1,052,933 kilos for the corresponding period of 1924. With regard to rubber manufactures, imports of rubber footwear were 71,575 kilos and 49,236 kilos during the first six months of 1925 and 1924 respectively. All other manufactures of rubber totaled 1,946,615 kilos, against 1,516,314 kilos.

The exports included rubber waste and old rubber—161,531 kilos in 1925 against 47,012 in 1924 and rubber footwear—48,153 kilos and 93,985 for the same periods respectively.

Czecho-Slovakia

The rubber industry in Czecho-Slovakia has raised prices, increases ranging from 20 to 40 per cent. Further advances are looked for if rubber continues high.

Russia

It is reported that M. Byzow, director of the experiment station of the Treugolnik company, has succeeded in producing synthetic rubber on a scale promising well for its technical value and its economical advantages. M. Byzow will investigate whether the Toluene installations at Baku can be adapted to the production of butadiene, the basis of synthetic rubber.

According to reports, the rubber factory "Kontinent" established at Riga, Latvia, some time ago is now employing 600 persons. It appears to be the intention of the concern to expand still further and to employ 1,000 persons in the near future. The other new factory, "Quadrat," was to have begun operations in May. Both these works turn out rubber footwear for which there is a strong demand.

DUNLOP-NORTH BRITISH SHOE CO., LTD.

The Dunlop Rubber Co. of Australia, Ltd., an entirely separate organization from the English company, has joined interests with the North British Rubber Co., Ltd., of Edinburgh, Scotland, in the formation of the Dunlop-North British Shoe Co., Ltd. In this enterprise, however, their mutual interests end with the manufacture of rubber tennis shoes, sand shoes, and galoshes, other important products including automobile and cycle tires, parafloor floor covering, hose, vulcanite combs, hot water bottles, golf balls, diving gear, waterproof sheeting, and india rubber and balata belting. The North British Rubber Co. of Australia Proprietary, Ltd., a subsidiary of the parent North British organization, and formed in Australia to market its products, will continue to handle the lines above mentioned except rubber footwear.

The new company, in which the Dunlop Rubber Co. is said to have a controlling interest, will be capitalized at £500,000, and its plant will be situated next to that of the Dunlop organization at Abbotsford, Melbourne. The construction of the necessary buildings and the installation of equipment will be carried forward as rapidly as possible, in order to begin production early in 1926. The goods manufactured will bear the trade mark now used by the North British Rubber Co., and that organization will continue to ship rubber-soled shoes to Australia until the local plant is able to supply the demand.—*Commerce Reports.*

Internationally Known Rubber Engineer

Few men have had the practical training and experience in mechanical and rubber engineering both in England and America that has Colin Macbeth, the well-known consulting engineer.

Born of Scottish parentage in Bolton, Lancashire, England, on December 3, 1880, he was educated in private schools in England and Germany, and at the age of fifteen began a six years' engineering apprenticeship in the steam engine building works of J. & E. Wood, Bolton. Meanwhile he attended local technical colleges at night, including textile subjects, and was graduated in 1901.

Colin Macbeth

For four years thereafter he was assistant works manager with Mather & Platt, Limited, Newton Heath, Manchester. To get American experience he then came to the United States, where he was for four years with the Atlas Engine Works, Indianapolis, Indiana, employed successively as draftsman and designer, boiler shop manager and assistant chief engineer in the manufacture of steam and oil engines, boilers and various special equipment.

Returning to England in 1908, he experimented for some twelve months on cushion tires for automobiles, which brought him in touch with rubber manufacturers, and he took a position with Wood-Milne, Limited, as sales manager. This connection dated from the time this firm took up tire manufacture in 1909 until 1913.

In the latter year he joined the Dunlop Rubber Co., Ltd., as works manager at Manor Mills in Birmingham, where golf balls, solid, cycle and motorcycle tires were manufactured.

One of his biggest undertakings was to lay out the factories at Fort Dunlop on modern lines and get them going, one department after another, in good shape to hand over to the production manager. In order to be quite sure of being up to date he made an extended tour of American tire factories and was thus able to compare British methods with the latest American practice.

This work kept him busy until 1918, when he concentrated on the development of the cord tire, handing this over to production in the spring of 1921. Feeling that cord tire construction made it possible to get greater pneumatic effect on modern tires, he then began to investigate the question of the "more-pneumatic" tire, which resulted in the introduction to England of the modern drop-base balloon tire.

Last December Mr. Macbeth severed his connection with the Dunlop Rubber Co., Limited, to engage in private business as a consulting mechanical engineer on rubber manufacturing problems and specializing in factory economy work. For three years he has agreed not to engage in tire work of any sort, but is free to pursue any other line of rubber work, whether manufacture, machinery, processes, layouts, designs, etc., including golf balls, with which he has had extensive experience.

Mr. Macbeth is a member of the Institution of Automobile Engineers, London, and of the Society of Automotive Engineers, New York, and a fellow of the Institution of Rubber Industry, London. His contributions to the technical press date from the paper on "The Design and Manufacture of Pneumatic Motor Tires," read to the Automobile Engineers in 1921 down to that on "The Development of the Balloon Tire," read before the same institution this year.

"PNEUMATIC TIRES," BY HENRY C. PEARSON. An encyclopedia of tire manufacture, repair, rebuilding, machinery and processes.

The Rubber Trade in the Far East

Malaya

Exportable Rubber

THE additional 10 per cent released for the quarter beginning with August, 1925, whereby shipments for the ensuing three months are expected to be increased by about 6,800 tons as compared with those for the past quarter, was of course looked for, but the increase in maximum production from 400 to 500 pounds per acre following upon the release of 6,000 tons of uncouponed rubber, was a different matter. Many believed that all companies producing on the basis of 400 pounds per acre would now be exporting 100 pounds per acre more, quite forgetting that comparatively few estates could obtain 500 pounds per acre. This higher assessment will not result in greater exportable allowance as the increase in maximum production from 400 to 500 pounds is estimated to add 600 tons to the exports for the present quarter. The adding of one kati to the small holders' special allowance will be a decrease of 900 tons. This is the result of rules which provide for the gradual elimination of this allowance as the percentage of release rises. Without the concession of one kati, the decrease would have been about 1,800 tons.

Uncouponed Rubber

The release of 6,000 tons of declared uncouponed rubber should not have created any stir as the dealers holding these stocks had for some time tried to get permission to export them at the minimum rate of duty. In fact it was announced last April that a licensed dealer holding uncouponed stocks could get permission to buy coupons if he applied in writing to the controller, the idea being to clear these stocks to prevent dumping should restrictions be removed. But the high price of rubber made it profitable for dealers to pay the maximum export duty of 42 cents per pound provided in the regulations.

The explanation how dealers came to hold such quantities of uncouponed rubber, is that in the early days they bought more rubber than they were supposed to with a view to assist small holders who could not be made to understand the restriction rules. In April, 1923, these excess stocks amounted to between 6,000 and 7,000 tons and as the government found it necessary to tighten restriction rules, exportation of this rubber was not permitted in spite of much bitter complaint until this April when it was apparently found advisable gradually to remove these stocks.

Increased Rubber Exports

Discussing the new increases, the *Straits Times* figures out that the new rate of assessment plus the added 10 per cent in the exportable allowance will bring the total increase on the amount exportable in the quarter ending July to 15 per cent. For the last quarter, standard production was 256,200 tons, to which should be added special allowance of 14,000 tons to small holders and 4,000 tons for Penang and Singapore, making the total 274,200 tons. One quarter of this was 68,550 tons and the exportable percentage having been 65, Malaya was entitled to ship 44,557 tons.

For the present quarter, 5 per cent or 13,710 tons have to be added to 274,200 tons to cover the increase in the standard and the allowance of the small holders, making the basis 287,910 tons. One quarter of this is 71,980 tons and 75 per cent of it is 53,985 tons, an increase of 9,428 tons over the previous quarter and 19,710 tons more than in the November-January quarter. Meantime Ceylon also will be exporting some 4,100 tons more so that in all the exports from the restriction area will be 23,810 tons more than they were in the quarter ended January, 1925. On top of this comes the 6,000 tons of uncouponed rubber.

The paper in question seems to be a little anxious and in drawing attention to these facts advises caution. It regrets what it terms "something of a surrender to clamor from America and elsewhere."

Restriction Statistics

According to figures supplied by the Registrar of Imports and Exports total exports of rubber from all the ports of British Malaya came to 24,809 tons in July, 1925, as compared with 21,669 tons in July, 1924. For the seven months ended July, 1925, the amount was 169,425.81 tons against 145,481.37 tons for the same period last year. The declared value of the rubber exported so far this year was $296,024,000, and for last year $140,150,000.

The imports of Pará rubber from countries outside British Malaya during July, 1925, were 16,192.41 tons and for the same month of 1924, 9,777.27 tons. For the first seven months of 1925 the total was 89,229.21 tons instead of 56,956.68 tons the year before.

The grades of rubber entering during July, 1925, were: smoked sheet, 2,036 tons; crêpe, 644 tons; unsmoked, wet, 11,287 tons; wet scrap, 980 tons, and wet lump, 1,243 tons.

Bud Grafting

From time to time it has been remarked in these columns that Malaya displays very little interest in bud grafting and that the amount of experimental work done here in this direction is hardly worth mentioning. The attitude toward this method of propagating Hevea is singularly indifferent both here and in Ceylon, local scientists having frequently warned planters not to resort to bud grafting except for the purpose of proving out their high yielding mother trees.

A writer in the *Straits Times* enters upon this subject and warns planters that Malaya is seriously falling behind the Dutch Indies in this regard. He recently returned from a visit to Sumatra where he found Americans and Dutch most broadminded and generous in the matter of allowing him to see the results of their work, their papers, records, plantations, nurseries, field work and tapping of new areas.

They saw the tapping on some 500 acres of bud graftings from unproved materials which at the age of 5 years are yielding an average of 300 pounds or more per acre by ordinary conservative alternate system tapping at a height of three feet. Scientists and planters seemed quite confident of getting 1,000 pounds per acre at least from their proved material when this comes into full bearing. On two different estates he saw two groups of bud grafted trees which had been regularly tapped for 3 and nearly 4 years. Bark renewal was good and the yield apparently increased not less than normally.

What he saw did not substantiate the fears of certain scientists in Malaya as to proneness of disease of bud grafts. Altogether he is convinced that very high yields are possible by the vegetative method of propagation and emphasizes the need for Malayan planters to use bud grafts and selected seedlings for the new areas they intend to open up.

Finally he points out that it is of vital importance to the industry that the 400 pounds per acre limit for standard production be wiped out of the ordinance now as it tends to help in discouraging planters to try seriously to increase their yields by new methods.

Rubber Smuggling

The phenomenal rise in the price of rubber has not made matters easier for the preventive fleet. For if smuggling paid when rubber was around one shilling it is certainly worth while now as attested by the numerous captures made. In one week the total amount of rubber found on smuggling craft came to nearly 25 tons. It goes without saying that for every boat captured several escape and that the amount of Malayan rubber that is reimported into the colony as foreign rubber must be quite respectable.

Netherlands East Indies

The following new organizations were formed on July 22-24, 1925, at Batavia, Java: The Bond van Eigenaren van Nederlandsch —Indische Rubber—Ondernemingen (Union of proprietors of Netherlands Indies Rubber Estates), representing over 72 per cent of the rubber area in Java; the union for coffee estate proprietors; unions for owners of tea estates and of cinchona estates. These bodies founded the association Algemeen Landbouer-Syndicaat (General Agricultural Syndicate). In the case of each of these societies J. R. Schenck de Jong is the president. The newly created associations all have their headquarters at Batavia.

The Agricultural Syndicate will represent the permanent central institution for studying views on questions of general importance to the hill cultures, it will represent the members as far as is necessary and will from the central administrative body.

The four unions will in the widest sense of the word take care of the common interests of the cultures concerned.

Reclaimed Rubber and Restriction

In a local publication it is pointed out that the sudden sensational rise of rubber has caused renewed interest in reclaimed rubber. The increased use of regenerated rubber will not be beneficial to the rubber planter who would then find the disadvantages of the aftermath of restrictions more than balance the temporary benefits derived while it was in force.

Taxation and Enterprise

J. Gerritzen, formerly director of the Java Bank and now in Holland, gave expression to certain views of the system of taxation in the Dutch East Indies in the course of an interview by a Holland paper.

While he concedes that the revised company tax is an improvement on the one recently abolished, the percentage of 12½ is too high, because this is not the only tax, there being other levies which bring the total to 18½ per cent for the rubber industry for instance.

This tax, even in its revised state, is considerably higher than that imposed in the neighboring British colonies. In the past it acted as a deterrent to enterprise in the Dutch Indies and still is not calculated to encourage new investors, so that development of the islands, particularly Sumatra, is not proceeding as rapidly as might be the case.

Netherlands Rubber Notes

It is reported that plans are afoot to bring about the fusion of the Amsterdam and the Rotterdam Tapanoeli rubber companies.

Official statistics show that the Dutch East Indies exported 111,716 tons of rubber (including wet native rubber) during the first half of 1925 as compared with 80,248 tons during the corresponding period of 1924. As the net Malayan exports are figured out at 98,752 tons for January-July, 1925, it appears highly probable that Dutch East Indian output for 1925 will exceed that from Malaya!

A comparison of percentages of productive areas and the percentage of rubber these contribute to the total output from European estates in East Coast of Sumatra shows that while British and Dutch estates have a larger percentage of productive area than other European estates, they give a lower percentage of the total crop. This is seen in the following table:

	Productive Area Percentage	Output Percentage
British	28.9	26.2
Dutch	36.5	35.2
American	16.7	18.2
Franco-Belgian	12.8	14.2
Others	5.1	6.2

From the additional fact that a greater percentage of the total Dutch area is mature than is the case with the three last-named groups, some deduce that not only English but also Dutch estates are voluntarily restricting output.

Ceylon

The news of the release of the 6,000 tons of declared uncouponed rubber in Malaya caused quite a flurry here and a good deal was said about betrayal by Malaya, although later reports showed that according to restriction rules the release was not illegal. However, there is a feeling of soreness over the business which is still regarded with a certain amount of suspicion.

Restriction in Malaya and Ceylon

In discussing the recent increases in the assessments of standard outputs in Malaya, the *Times of Ceylon* points out that if the position in Malaya is compared with that in Ceylon, the raising of the limit from 400 to 500 pounds per acre is no real concession. It had been proposed to introduce a limit of 450 pounds in Ceylon some time ago but nothing came of this and at present there are 260 estates here, of which 174 are Ceylonese owned which have assessments above 450 pounds.

It is not considered likely that the concession will add much to Malaya's output as it is thought that comparatively few estates will get an assessment of 500 pounds, and some will be allowed about 420 pounds or 450 pounds per acre.

Restriction Statistics

The Controller of Rubber for Ceylon reports that the exports of rubber during July, 1925, amounted to 3,749 tons of home grown and 389 tons of imported rubber. In July, 1924, the figures were 3,215 and 167 tons respectively. Latex exports for July, 1925, came to 500 gallons, or 1,500 pounds.

Indo-China

In a report to the Comité National des Conseillers du Commerce Extérieur de la France (National Committee of Councillors for the Foreign Commerce of France), M. Leonard Fontaine, who is a member of this Committee, discussed the rubber plantations of Indo-China.

At present French consumption of crude rubber is over 30,000 tons and Indo-China could produce only 10,000 tons when all the trees planted reach maturity. Wild African rubber, it is pointed out, is becoming less important each year.

However, if much cannot be expected from Indo-China in the near future, the more distant prospects are favorable. Most of the large companies have extensive areas in reserve. In Cochin-China alone there are altogether about 3,000,000 hectares of lands suitable for rubber waiting to be opened up. Climatic conditions are very good and the labor regulations are favorable to planters.

This territory plays an unimportant part in rubber production due to the fact that most of the companies began operations only a few years before the outbreak of the war with just sufficient funds to tide them over the period between the time of planting and of maturity. The war caused a set-back and then came the abnormal rate of the piaster which raised costs considerably. However, it is hoped that now the first great difficulties have been overcome, exploitation will proceed smoothly when a good future for the colony is predicted.

Rubber Patents, Trade Marks and Designs

The United States

August 11, 1925*

1,548,830 Child's garment with elastic loops. Alice M. Dunsworth, Oakland, California.
1,548,843 Tire. Alex. A. Korn, Chicago, Illinois.
1,549,039 Rim and wheel lock. Floyd J. Wilson, Walla Walla, Washington.
1,549,058 Wheel rim. Thomas F. Bowler, Boise, Idaho.
1,549,073 Toy airplane. Daniel I. Dwyer, assignor of one-half to Earl A. Smith, both of Dayton, Ohio.
1,549,089 Football with inner rubber bladder. Max Kayser, Wald, near Solingen, Germany.
1,549,099 Telephone transmitter with sponge rubber armature. Orin E. Marvel, Dayton, Ohio.
1,549,115 Tire gauge. John Allen Hancock, Columbia, South Carolina.
1,549,180 Demountable tire rim. Will J. Brune, Tekamah, Nebraska.
1,549,213 Tire valve. Marshall J. Payne, assignor to The Payne Valve Co., both of Staunton, Virginia.
1,549,264 Fountain pen. George A. Nealon, Indianhead, Maryland.
1,549,360 Tire chain. Harry Harford, assignor to Harford Diamond Chain Co., both of Lewiston, Idaho.
1,549,419 Non-skid chain. Chauncey W. Hodges, Galesburg, Michigan.
1,549,454 Separable rim for vehicle wheels. Floyd L. Cox and Roy C. Brock, Davenport, Iowa.
1,549,510 Water bag. Bernhard Schnitzler, New York, N. Y.
1,549,571 Marble shooter with rubber band. Archibald W. Bowser, Galeton, Pennsylvania.
1,549,668 Tire core. Laurence L. Johnson, Los Angeles, California.
1,549,672 Suspender with adjustable elastic sections. Lester B. Lazier, Buffalo, New York.
1,549,710 Physical exercising apparatus with a grip of resilient, yieldable sponge rubber. Guy Campbell, London, England.
1,549,718 Transversely split vehicle rim for resilient tires. James E. Hale, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.
1,549,721 Connecting device. Herman T. Kraft, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

Reissues

16,135 Vehicle wheel. Charles F. Erickson, Brooklyn, New York. Filed December 8, 1919. Serial No. 343,423. Original No. 1,251,358, dated December 25, 1917. Serial No. 151,285, filed February 27, 1917.

August 18, 1925*

1,549,762 Pneumatic tire construction. John R. Gammeter, Akron, Ohio, assignor to The American Chain Co., Bridgeport, Connecticut.
1,549,790 Inflatable toy. Albert Neusella, Chicago, Illinois.
1,549,827 Collapsible wheel rim. James N. Gourley, assignor of 51 per cent to Claude F. Curtis, both of Evansville, Indiana.
1,549,962 Air bag and method of construction. Richard S. Burdette, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.
1,550,080 Attachment, including a ferrule of rubber, for a fishing rod. John A. Lehrritter, Cincinnati, Ohio.
1,550,145 Demountable rim for vehicle wheels. Harold J. Bradt, Rochester, Michigan.
1,550,216 Cushion shoe lift. Thomas J. McGrath, Chicopee, Massachusetts.
1,550,341 Sectional wheel rim. Michael Caporale, Revere, assignor to R. C. G. Co., Boston, both in Massachusetts.
1,550,483 Golf tee with peg of hard rubber. Frederick F. Wulkop, Geneva, New York.
1,550,499 Pneumatic pad for cassettes. Arthur W. Buck, St. Louis, Missouri.
1,550,516 Detachable rubber heel Alfred Victor Des Moineaux, Denver, Colorado.
1,550,566 Combined dust cap and seal for tire valve stems. George W. Oakes, Crystal City, Missouri.
1,550,601 Cushion shoe. George J. Winter, Buffalo, New York.
1,550,625 Fountain brush with elastic band. James Bidwell Mills, Toronto, Ontario, Canada.
1,550,642 Baseball, partly composed of rubber. Philip B. Bekeart, San Francisco, California, assignor to George A. Reach, Philadelphia, Pennsylvania.

Reissues

16,142 Air bag and method of construction. Richard S. Burdette, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio. Filed June 27, 1925. Serial No. 40,119. Original No. 1,412,799, dated April 11, 1922. Serial No. 504,211, filed September 29, 1921.

16,144 Combination pen and pencil. Albert Romaine Tallman, assignor to Ed B. Sulzbacher, both of Nashville, Tennessee. Filed November 5, 1923. Serial No. 672,976. Original No. 1,417,642, dated May 30, 1922. Serial No. 503,744, filed September 28, 1921.

16,145 Toggle joint self filling pen. John C. Wahl, Chicago, Illinois, assignor to The Wahl Co., Wilmington, Delaware. Filed February 17, 1923. Serial No. 619,757. Original No. 1,365,754, dated January 18, 1921. Serial No. 210,515, filed January 5, 1918.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

August 25, 1925*

1,550,772 Resilient protector for heels and soles. William James Russell Allen, Waverley, near Sydney, New South Wales.
1,550,795 Baseball with cork center and shell of vulcanized rubber. William H. Fox, Minneapolis, Minnesota, assignor to A. G. Spalding & Bros., New York, N. Y.
1,550,930 Bag of moisture proof material with elastic cushion pads, for protecting the hair. Della Clark Sullivan, New York, N. Y.
1,550,983 Fan belt with an outer covering of relatively soft rubber. Benjamin H. Pratt, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.
1,551,010 Arch supporter. John Clark, Buffalo, New York.
1,551,014 Collapsible core. Ernest W. Doak, Pontiac, Michigan.
1,551,019 Fountain pen. Carmine Fabrizio, New York, N. Y.
1,551,099 Inflatable ball, comprising an inner resilient member and outer laceless cover. Hugo Goldsmith, Cincinnati, Ohio, and Irl Tubbs, Superior, Wisconsin, assignors to The P. Goldsmiths Sons Co., Cincinnati, Ohio.
1,551,160 Elongated comb. Charles Laufe, New York, N. Y.
1,551,174 Tire. Amato N. Sammarone, Akron, Ohio.
1,551,245 Cushion heel for shoes and the like. William F. Dohemann, San Francisco, California.
1,551,364 Truss with soft rubber cushion. Richard B. Brooks, assignor by mesne assignments to Brooks Rupture Appliance Co., both of Marshall, Michigan.
1,551,399 Pneumatic tire. Aron David Jones, assignor of 25 per cent to James Newton Robinson, both of New Haven, Connecticut.
1,551,445 Wheel rim. James H. Wahenhorst, Jackson, Michigan.
1,551,452 Cushion seat of sponge rubber. Mario Fernandez Arias, Newark, New Jersey.
1,551,460 Pneumatic tire. Louis Adrien Block, New Orleans, Louisiana.
1,551,489 Garter. George J. Keene, Chicago, Illinois.
1,551,499 Dilator. John G. Homan, assignor to The Electro-Thermal Co., both of Steubenville, Ohio.

September 1, 1925*

1,551,560 Fountain pen. Bernard Hagberg, Muskegon, Michigan.
1,551,563 Golf club with rubber sleeve. Paul E. Heller, Newark, New Jersey.
1,551,710 Tire valve. Cornelius H. Suckau, Korba, via Champa, India.
1,551,743 Wear plate for rubber heels. George P. Hogan, Chicago, Illinois.
1,551,759 Detachable wheel rim. Zeno Littman, New York, N. Y.
1,551,792 Fountain pen. Herman E. Bleier, Detroit, Michigan.
1,551,959 Eraser comprised of scratching knives, rubber strips, etc., Frederick W. Klein, Serafina, New Mexico.
1,551,986 Toy balloon. John Ferretti, Hastings, Pennsylvania.
1,552,022 Rubber shoe. Arthur A. Willson, Chicago, Illinois.
1,552,081 Cushion tire. Carl E. Rett, Akron, assignor to Lambert Tire & Rubber Co., Barberton, both in Ohio.
1,552,097 Collapsible auto rim. Charles A. Tuttle, Bucyrus, Ohio.
1,552,106 Pneumatic tire. Ivan Andre, Deland, Florida.
1,552,241 Rubber step tread for automobiles. Frank H. Stanwood, Wilmette, assignor to Stanwood Equipment Co., Chicago, both in Illinois.
1,552,258 Landing gear with a split rubber guard and other items of rubber. Paul G. Zimmerman, Keyport, New Jersey, assignor to Aeromarine Plane & Motor Co., New York, N. Y.
1,552,298 Swimming device. Ogasap Harootunian, Los Angeles, California.
1,552,301 Teething ring. Dennis E. Hogan, Faribault, Minnesota.
1,552,379 Automobile wheel. Steve Bakos, Alpha, New Jersey.
1,552,381 Vehicle cushion, with a cylindrical inflatable cushion. Edward Bowers, Paducah, Kentucky.

The Dominion of Canada

August 11, 1925

252,459 Devices partly comprised of india rubber, for packing eggs. David Arthur Cantelon and John Zuefle, co-inventors, both of Hensall, Ontario, Canada.
252,471 Bathing cap with a compressible member which together with the cap forms a vacuum chamber to keep cap on and water tight. Lynn W. Beman, Chicago, Illinois, U. S. A.
252,495 Baby feeding bottle with rubber nipple. Sylvain Dreyfus, Lausanne, Switzerland.
252,502 Anti-skid pneumatic tire protector. Dario Ferrari, Boston, Massachusetts, U. S. A.
252,524 Tire. Andrew Lang, Edmonton, Alberta, Canada.
252,555 Foot massaging device with resilient protuberances. Milton E. Stephenson, Boston, Massachusetts, U. S. A.
252,623 Wheel adapted to receive a tire carrying rim. The Motor Wheel Corporation, Lansing, Michigan, assignee of George H. Forsyth, Chicago, Illinois, both in the U. S. A.
252,624-252,627 Disc wheels. The Motor Wheel Corporation, Lansing, Michigan, assignee of George H. Forsyth, Chicago, Illinois, both in the U. S. A.
252,648 Foot corrective appliance comprising a relatively soft and resilient member. Dr. Wood Foot Appliance Co., assignee of Joseph B. Saums, both of Cleveland, Ohio, U. S. A.

August 18, 1925

252,685 Tire rim. Joseph Louis Bourdua, Montreal, Quebec, Canada.
252,744 Tire boot. Ray L. Peugh, Oklahoma City, Oklahoma, U. S. A.
252,753 Inflatable air cushion or bed. Thomas Rigby, Kingsley, near Frodsham, County of Chester, England.

Chemical patents will be found on page 16. Machinery and Process Patents on pages 19-20

252,755 Tire casing. Frank G. Schenuit, Baltimore, Maryland, U. S. A.
252,758 Puncture proof lining for an inflatable automobile or similar tube; composition comprising mixture of vulcanizing cement, melted rubber and honey. John Schwab, Jr., Winnipeg, Manitoba, Canada.
252,776. Hose, largely composed of rubber, and method of making. Daniel Michel Weigel, Trenton, New Jersey, U. S. A.
252,830 Wheel. The Motor Wheel Corporation, Lansing, Michigan, assignee of George H. Forsyth, Chicago, Illinois, both in the U. S. A.

August 25, 1925

252,915 Inner tube for pneumatic tires. William A. Caldwell, Manila, Philippine Islands.
252,921 Nursing bottle with rubber sleeve. Frank Joseph Creque. Cuyahoga Falls, Ohio, U. S. A.
252,923 Rubber toy trumpet. Morland Micoll Desseau, London, England.
252,983 Baseball with cork center and shell of vulcanized rubber. Thomas S. Shibe, Philadelphia, Pennsylvania, U. S. A.
252,992 Rubber lift for wooden heels. Louis Tobe, Pittsburgh, Pennsylvania, U. S. A.
252,996 Automobile wheel. James H. Wagenhorst, Jackson, Michigan, U. S. A.
253,001 Nursing bottle with rubber nipple. James Carl Wangen, Great Falls, Montana, U. S. A.
253,043 Window strips, partly composed of rubber. The Dryden Rubber Co., assignee of George C. Reeves, both of Chicago, Illinois, U. S. A.
253,086 Demountable rim. The Rubsam Corporation, assignee of Charles F. Rubsam, both of Jackson, Michigan, U. S. A.
253,113 Truss with rubber ring. Frank Joseph Kamber, Alameda, California, and John Hoffman, Douglas, Arizona, assignee of one-half of the interest, both in the U. S. A.

September 1, 1925

253,193 Laminated sheet material, partly comprised of vulcanized rubber. Ernest Hopkinson, New York, N. Y., U. S. A.
253,295 Cushion tire. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of Ernst Eger, Detroit, Michigan, U. S. A.
253,357 Detachable tread for boots and shoes. Michael J. Barry, assignee of Richard B. Chalue, both of Toronto, Ontario.

The United Kingdom

August 6, 1925

235,246 Syringes with rubber tube or clip, for surgical use. H. O. Gunewardene, 68 Lonsdale Road, Barnes, London.
235,248 Packing rubber nuts such as those of Hevea Braziliensis. A. W. Macilwaine, Freshfield, Elloughton, East Riding, Yorkshire.
235,355 Vibratory massage apparatus. See specification 235,356. G. J. Macaura, 53 Ladbrooke Grove, Holland Park, London.
235,356 Vibratory massage apparatus with vulcanite disk. G. J. Macaura, 53 Ladbrooke Grove, Holland Park, London.
235,437 Apparatus with elastic diaphragm or squeegee, for drying bottles, etc. H. W. Hovenden, 8 Ulverton Road, Dalkey, Dublin, Ireland.
235,447 Reservoir pens. Conway, Stewart & Co., Ltd., 73 Shoe Lane, and G. F. Smith, 322 Old Ford Road, both in London.
235,469 Bowden, etc., mechanism with rubber grip. H. T. Laslett, 9 Price's avenue, Cliftonville, Margate.
235,471 Washing apparatus, for connection with rubber ring, for use in washing photographic films. A. G. O'Hara, 44 High street, Fulham, London.
235,501. Apparatus for cleaning windscreens. R. O. McGrath, 12 Onslow ave., Mansions, Richmond, Surrey.
235,545 Method of using a rubber coated web for printing on fabrics. Soc. Anon. Freres Kochlin, Mulhouse, Haut-Rhin, France.

August 12, 1925

235,617 Vacuum cleaning apparatus with rubber buffers, rubber packing, etc. F. J. T. Bell, Castlewood Place, Mossley Road, H. C. Bell, 52 Carlton Road, Hurst, both in Ashton-under-Lyne, B. Butler, Carholme, Higher King street, Dukinfield, and T. Pennington, Lynwood, Smallshaw, Ashton-under-Lyne, all in Lancashire.
235,618 Vacuum cleaning apparatus, with bellows for disinfecting air and gases; with wheels with solid rubber tyres. F. J. T. Bell, Castlewood Place, Mossley Road, H. C. Bell, 52 Carlton Road, Hurst, both in Ashton-under-Lyne, B. Butler, Carholme, Higher King street, Dukinfield, and T. Pennington, Lynwood, Smallshaw, Ashton-under-Lyne, all in Lancashire.
235,657 Driving belts comprising the use of canvas belts and canvas covered blocks, the canvas being impregnated with balata, gutta percha, etc. D. Todd and R. & J. Dick, Ltd., 3 McPhail street, Greenhead, Glasgow, Scotland.
235,661 Electric cables with rubber covering in two colors. Pirelli General Cable Works, Ltd., 144 Queen Victoria street, London, B. Valori, 10 Forest View, and R. Horley, 19 Howard Road, both in Southampton.
235,669 Check valve with a plane surface of material like vulcanite. H. Tudor, 24 College street, London.—C. F. Heywood, 750 Calle Moreno, Buenos Ayres, Argentina.
235,686 Hand propelled wagons with crockery washing machines, including a rubber disc. E. M. Bolton, Beresford, Latchmoor avenue, Gerrard's Cross, Buckinghamshire.
235,697 Brushes with bristles secured in a rubber pad; comprising the use of pure rubber and of vulcanized rubber. S. W. Pearson, Vista, Wytheham avenue, Hornchurch, Essex.
235,699 Elastic bandages. C. E. Smith and P. E. Daniels, St. Marks Works, Belgrave Gate, Leicester.
235,719 Composition for golf ball cover comprising gutta percha, balata, raw rubber, etc. A. Speedy, 17 Disraeli Road, Putney, and A. G. Spalding & Bros., Ltd., 317 High Holborn, both in London.
235,730 Oscillating dampers, with which rubber buffers may be employed, for railway vehicles. W. E. Ireland, Wenham Cottage, Sompting, near Worthing, Sussex.
235,733 Block paving comprising the use of rubber strips or slabs. C. W. Read, Armoury Mills Rubber Works, Conington Road, Lewisham, London.
235,738 Apparatus with india rubber lining, for separating granular material. A. Barr, Caxton street, Anniesland, Glasgow, Scotland.
235,805 Triple tread for solid or pneumatic tyres. E. W. Coleman, Lawn View, Edwards avenue, Northolt Junction, Southall, Middlesex.
235,854 Wheel tyres. E. Bugatti, Molsheim, Bas-Rhin, France.

August 19, 1925

235,938 Rubber paving blocks and molding box. Universal Rubber Paviors (Manchester 1923), Ltd., and L. Gaisman, Canning street, Audenshaw, near Manchester.
235,954 Collapsible shelter, with waterproof base, flap, etc., for use in bathing. M. A. Johnson, 4 North Road, Cardiff, Wales.
235,967 Portable spirit stoves detachably and telescopically combined with a heating device, etc., including a soft rubber ball. A. Schwieger, 32 Hermannstrasse, Hanover, Germany.
235,970 Wheel tyres. C. A. H. Brown, Rosslyn House, Kings Drive, Thames Ditton, Surrey.
235,971 Wheel tyres. E. B. Killen, 27 Queen Victoria street, London.
235,978 Corset stiffeners made of elastic metal wire with coating of artificial rubber, cellulose, etc. A. Josse, Etampes, Seine-et-Oise, France.
236,007 Vehicle window closing and opening apparatus, with rubber pad. W. Jackson, and Jackson & Co., Ltd., Charles Place Drummond street, Euston, London.
236,043 Machine with rubber-covered feed rollers, for dusting and polishing tin plates. Upper Forest & Worcester Steel & Tinplate Works, Ltd., and G. Rowe, Aelybryn, both in Morrison, Glamorgan, Wales.
236,054 Crepe rubber sole or heel with increased gripping qualities. J. Marlow & Sons, Ltd., Phoenix Shoe Works, St. George's street, and F. Walding, 58 Bostock avenue, both in Northampton.
236,056 Golf tee, partly composed of rubber. T. C. Futers and C. J. Forrester, Harp street, Old Lane, Higher Openshaw, Manchester.
236,075 Bandeaux with elastic cord or webbing, for hats, etc. L. Cohen, 323 Clara avenue, St. Louis, Missouri, U. S. A.
236,084 Combined fountain pen and pencil holder. E. M. Slack, Marfa, Texas, U. S. A.
236,095 Surgical syringe with elastic stopper. F. Meyer, 5 Vereinstrasse, Aachen, Germany.
236,108 Ankle and heel protectors with an elastic band, for stockings. D. Riddick, Glanmire, Dalkey, Dublin, Ireland.
236,116 Spring suspensions with india rubber rollers for vehicles. W. W. Groves, 30 Southampton Buildings, London.—International Motor Co., 25 Broadway, New York, N. Y., U. S. A.
236,127 Rubber tube joint. Hygienic Installation Co., Ltd., and E. C. Hopkins, 8 St. Martin's Place, Westminster, London.
236,132 Golf tee with rubber cap. C. E. Loyd, 373 East 2nd street, Los Angeles, California, U. S. A.
236,164 Roentgen ray plate and film holder with rubber air cushion. Siemens & Halske Akt.—Ges., Siemensstadt, Berlin, Germany.
236,173 Under-driven centrifugal machine with rubber cylinder for spinning artificial silk, etc. Glanzfäden-Akt.—Ges. Petersdorf, Riesengebirge, Germany.
236,208 Deflation alarm for pneumatic tyres. A. Poitrineau. Rue Croix des Vignes, Gennevilliers, and L. Gonsard, Rue des Bas, Asnières, both in France.

August 26, 1925

236,243 Spring suspension, partly comprised of india rubber, for a motor vehicle. W. L. Adams, 401 George street, New Haven, Connecticut, U. S. A.
236,313 Magnetic instruments etc. for the telephone; involving the use of a rubber solution. A. F. Sykes, Arundel House, Warwick Road, New Barnet, Hertfordshire.
236,316 Galvanic batteries with detachable pads of soft rubber. W. H. Simms, 47 Victoria street, Westminster, London.—H. S. Potter, 26 Cullinan Buildings, Main street, Johannesburg, South Africa.
236,323 Stopper involving the use of a packing ring and a rubber sheet, etc. E. C. Astington, 4 Ashburton Road, Croydon, and E. T. Flann, 47 Leigham Vale, Streatham, both in London.
236,324 Driving belt including a layer of rubber. T. Sloper, Southgate, Devizes, Wiltshire.
236,333 Thermionic valve holders with a rubber ring. W. S. Graff-Baker, 15 Queen's Road, Ealing, London.
236,337 Surgical cupping appliance, largely comprised of rubber. C. A. Clitherow, 138 Portsdown Road, Maida Hill, London.
236,449 Tennis ball with concentric shells, one of which is of rubber. J. Combey, 19 Montpelier, Edinburgh, Scotland.
236,456 Container for gum, including a rubber spreading pad. O. Müller, 9 Augustastrasse, Breslau, Germany.
236,502 Ball, with an air bladder, for games. A. Borchers, 29 Ferdinandstrasse, Hamburg, Germany.
236,505 Gas balloon for toy or advertising purposes. G. Schützler, 97 Zimmerstrasse, Berlin, Germany.
236,506 Rubber offset blankets for printers. L. Pepe, 35 Shoe Lane, and D. De Nagy, 10 West Kensington Mansions, West Kensington, both in London.
236,510 Elastic bandage of india rubber, as belt, corset, etc. L. M. C. Charnaux, 26 Avenue Victoria, Vichy, Allier, France
236,512 Stoppers, packing rings, for sealing containers. Aridor Patents, Ltd., 53 Great Marlborough street, London.—assignees of P. S. Moyer, 579 East Illinois street, Chicago, Illinois, U. S. A.
236,513 Tyre and like inflating valves. A. Schrader's Son, Inc., 470 Vanderbilt avenue, assignees of J. Wahl, 114 Euclid avenue, both in Brooklyn, New York, U. S. A.
236,548 Device for faciliating inspection of the inside of tyre cover. J. J. M. Ringard, 22 Rue des Quatre-Fils, Paris, France.

236,552 Mixing device with rubber clamp, for mayonnaise, etc. Soc. Hauser Freres, 159 Avenue Farmentier, Paris, France.
236,584 Fluid pressure brake system with rubber aprons. Hydraulic Brake Co., 5833 Russell street, assignees of B. S. Floraday, 542 Kitchener street, both in Detroit, Michigan, U. S. A.
236,585 Tyre attachments to rims. E. Bugatti, Molsheim, Bas-Rhin, France.

New Zealand

August 13, 1925

51,731 Cushion tire. Ernest Hibbert, 33 Verner street, Goulburn, New South Wales.
52,302 Sock and stocking suspender. Austin Leopold Kelly, 96 Constable street, Newtown, Wellington, New Zealand.
53,445 Tennis ball, partly comprised of gutta percha, balata or rubber mixture. The Dunlop Rubber Co., Ltd., of Dunlop House, 1 Albany street, Regent's Park, London, and Albert Ernest Penfold, of the aforesaid company's works, Fort Dunlop, Erdington, Birmingham, Warwick, both in England.
54,159 Hosiery protector of rubber. Flora Samson, Belle Cable, and John McFarlane Sampson, trading as "The Nixole Darn-no-More Co.," of 19 Courtney Place, New Zealand.

Germany

417,632 (April 10, 1924). Rubber ball. Continental-Caoutchouc und Gutta Percha Compagnie, Hannover.
418,179 (November 16, 1923). Injection syringe with mechanically operated piston (addition to patent No. 414,393). Fritz Lorenz, Neulewin, Oderbruch.
418,232 (January 25, 1925). Injection syringe (addition to patent 338,830). Otto Schmidt, Nordhausen a. H.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

August 11, 1925, Act of February 20, 1905

201,823 KEX—puncture plug for automobile tires. The Kex Manufacturing Co., Cleveland Ohio.
201,834 Word: JATON in broken letters with the J and T larger than the rest, slightly running uphill—waterproofed fabrics in the piece, especially cotton, linen, etc. W. G. & F. Proofing Co., Inc., Brooklyn, New York.
201,845 Words: CORINTHIAN CORD arranged in slight curve upward and with long space between two words—vehicle tires of rubber, rubber and fabric, cord, and other goods. The Thomas Rubber Co., Worcester, Ohio.
201,941 Representation of a TIGER walking, with the word: TIGER in black capitals underneath—rubber erasers. Eberhard Faber Pencil Co., Brooklyn, New York.
201,982 SOLVENE—fluid for cleaning rubber stamps, typewriter type, etc. The Service Products Manufacturing Co., Chicago, Illinois.
201,997 BALLABIN, in capital and small letters—Balasta belt dressing. H. Rost & Co., Hamburg, Germany.
202,014 Representation of a fountain pen. Trade mark consists of a fountain pen with a red body portion and black end portion—fountain pen. The Parker Pen Co., Janesville, Wisconsin.
202,039 Representation of a fountain pen standing on end and slightly tilted towards the observer. Trade mark consists of a red dot on the end of the pen—fountain pens and fountain pen caps. Sanford Pen Co., Inc., New York, N. Y.

August 11, 1925, Act of March 19, 1920

202,079 Word: OVERMAN with first and last letters larger than rest. Two lines are drawn over and under the smaller letters—rubber tires. Overman Cushion Tire Co., Inc., New York, N. Y.
202,080 "The WORLD'S BEST TIRE"—rubber tires. Overman Cushion Tire Co., Inc., New York, N. Y.

August 18, 1925, Act of February 20, 1905

202,133 Word: ANSOL in broken letters running from lower left to upper right corner—solvents and solvent mixtures. U. S. Industrial Chemical Co., Baltimore, Maryland.
202,168 Word: ASCEPTO with somewhat fancy letters decreasing in size from A to O and irregularly arranged—nursing bottle nipples, fountain syringes, hot water bottles. Robert J. Pierce, Inc., New York, N. Y.
202,178 Egg shaped outline enclosing representation of an alligator holding a box of Alligator Grip in a curve of his tail. Above the animal are the Words: ALLIGATOR GRIP, the first in script—tire patches. Ray L. Feugh, doing business as Alligator Manufacturing Co., Oklahoma City, Oklahoma.
202,248 FLEXYDE—baseballs. Marathon Rubber Co., Inc., Akron, Ohio.
202,261 FOUR SQUARE—golf balls. The Faultless Rubber Co., Akron, Ohio.
202,262 Word: WALCO superimposed upon a support of straight and fancy (scroll-work) lines; in the center of which is an oval circle enclosing the words: Elas Tricot in script—wide elastic fabric suitable for making corsets, etc. W. A. Lawrence Co., Inc., Poughkeepsie, New York.
202,269 Representation of a triangle in which are enclosed the following: 1860—T. P. A. P. M.—and a signature in Russian letters; the three items being arranged in a column, rubber dolls and other toys, fishing rods, etc., tennis rackets and other sport goods. Société Francaise Treugolnik, Levallois-Perret, France.
202,286 CALLOIN—boots, shoes, slippers of rubber, leather or combinations thereof and hosiery. H. Ross Callaway, Paris, France.
202,314 Word: MARATHON with M in script and with one side extended and running under other letters. This extension is black and the following words in white letters are superimposed upon it: BEST IN THE LONG RUN—fountain pens and pencils. Marathon Fountain Pen Co., New York, N. Y.
202,328 COMET—lead pencils and rubber erasers. Eberhard Faber Pencil Co., Brooklyn, New York.

August 18, 1925, Act of March 19, 1920

202,413 Word: BUICK in fancy script letters, slanting upwards; white letters on a fancy oblong square as background—motor driven vehicles. General Motors Corporation, Detroit, Michigan.

August 25, 1925, Act of February 20, 1905

202,426 Representation of a section of wire. Trade mark consists of two threads or strands of the color green under the outer braid covering—insulated electric wires. Acorn Insulated Wire Co., Brooklyn, New York.
202,542 Representation of a man in colonial uniform mounted upon a galloping horse; in the background are such items as a rail fence, country fields, tree, etc. Below is the word: REVERE. All is enclosed in a shield—rubber thread. United States Rubber Co., New Brunswick, New Jersey, and New York, N. Y.

August 25, 1925, Act of March 19, 1920

202,600 Words: The BLUE BOOT, The Boot Without A Kick, arranged in four line column, the second and third words are in the largest type—tire boot. Auto Accessories Co. of Minnesota, St. Paul, Minnesota.
202,610 Circle enclosing a black ribbon at top and bottom carrying words WASHABLE ELASTIC in white letters; between these is the word: KENYON'S with "trade mark" in the lower part of the Y. The circle also includes in small type the words: Extra Strong, Yds., No. and Mercerized—elastic and non elastic braid and narrow braided and woven elastic fabric. United States Braid Co., Central Falls, Rhode Island.

September 1, 1925, Act of February 20, 1905

202,632 FORMOLD—in somewhat fancy lettering—corsets and brassieres. Associated Merchandising Corporation, Newark, New Jersey.
202,635 BLACK CIRCLE enclosing a BELL like the Liberty Bell—inner tubes, pneumatic tires and cord tires. The Columbia Tire and Rubber Co., Mansfield, Ohio.
202,637 Picture of Applicant—massing devices and obesity reducing bands. Thomas Lawton, New York, N. Y.
202,641 DIXIE—Cabinets for shower baths. Dixie's Metals Products Co., Birmingham, Alabama.
202,644 UNIFLEX—middle letters smaller than the rest-rubber force cups, basin stoppers and sink stoppers. Uniflex Rubber Co., Rutherford, New Jersey.
202,673 LUBCO in script with the end of the L extended under other letters and connected to upper portion of final O; upon this extension is superimposed the word: PRODUCTS, and between extension and main word is the word: DETROIT—shopping, bathing, etc., bags. Lederer Utility Bag Co., Detroit, Michigan.
202,674 RAINBOW—Golf, hockey, Lacrosse, etc., balls, baseballs, footballs, etc. The Game Balls Co., Limited, Brentford, England.
202,688 KLOTHO MENDO—the sides of the M are extended left and right under the other letters; one extension connects with the first letter, k—general mending cement for cloth, leather, paper and rubber. Otto L. Albertson, doing business at Klotho Mendo Co., Sioux Falls, South Dakota.
202,707 Word: FURMENDA in large capital letters with top of F extended over the letters—adhesive cloth. The Western Fur Co., St. Louis, Missouri.
202,726—FEATHERLIGHT—in fancy light type and underlined—corsets, girdles, brassieres, etc. Olmstead Corporation, Springfield, Massachusetts.
202,728 DIXIE—middle letter is largest—rubber heels. Taunton Rubber Co., Taunton, Massachusetts.
202,736 TUFFOID—belting, hose, asbestos, rubber packings and lacings. Rudolph Orlob, doing business as Mountain States Rubber Co., Salt Lake City, Utah.
202,737 M S R in large capital outline letters: over the M is the word MOUNTAIN and underneath, the word: MAXIMUM; over and under the S are the words STATES and SERVICE, and over and under the R, the words: RUBBER and RENDERED—asbestos and rubber sheet packing. Rudolph Orlob, doing business as Mountain States Rubber Co., Salt Lake City, Utah.
202,761 ALLTOGETHER—combination brassiere-corset of partly textile and partly elastic fabric. Camlin Corset Co., Inc., New York, N. Y.
202,769 No. 900 SUPERFINE—tire covers. The Hinson Mfg. Co., Waterloo, Iowa.
202,786 PARIS—narrow elastic. A. Stein & Co., Chicago, Illinois.
202,787 Representation of a man riding a bucking bronco; picture enclosed in double circle; words: BRONCHO and in smaller type, INNER TUBE are placed across and through top of circle—rubber inner tubes for automobile tires. The J. B. Burwell Supply Co., Oklahoma City, Oklahoma.

September 1, 1925, Act of March 19, 1920

202,808 Large letter S forming the first letter of the following words arranged in a column: SILK STOCKING SAVER—shaped heel insert of rubber or other suitable material for placing in the heels of shoes to protect silk stockings. Gotham Silk Hosiery Co., Inc., New York, N. Y.

202,814 Words: ARCH CUFFS arranged in a slight curve—arch supporters, foot bands, etc. Frank H. Jensen, Boston, Massachusetts.

The Dominion of Canada

Registered

August 18, 1925

38,266 Word: "GRIPMOR"—men's, women's and children's garters, hose supporters, etc. American Narrow Fabric Co., Worcester, Massachusetts, U. S. A.

August 25, 1925

38,274 Words: "AUTOFABS BUTTONLESS GLUV FIT"—radiator hood covers and tire covers. Auto Fabrics Products Co., Montreal, Quebec.

September 1, 1925

38,337 Word: BEAUCRAFT—men's, women's and children's articles of clothing, including shoes and slippers made of rubber and fabric. William Bloom and Co., Inc., Borough of Manhattan, New York, N. Y., U. S. A.

38,361 "PARKER"—pens and mechanical pencils. The Parker Pen Co., Janesville, Wisconsin, U. S. A.

38,362 Fountain pen with red body portion and two black end portions —fountain pens. The Parker Pen Co., Janesville, Wisconsin, U. S. A.

The United Kingdom

August 5, 1925

458,747 VUL-COLD-NIZE—Prepared india rubber in liquid or plastic form for adhesive purposes. Leighton & Barfield, 4 Hospital street, Montreal, Canada. Address for service in the United Kingdom. care Barlow, Lyde & Yates, 165 Fenchurch street, London, E. C. 3.

459,502 RUNCO—all goods included in Class 40. Runwell Cycle Co., (London) Limited, 16 Great Eastern street, London, E. C. 2.

459,715 WARDITE—Carbon black for use in the manufacture of rubber and of rubber goods. Harry Harvey Ward, 3 All Souls Place, Regent street, London, W. I.

459,925 SUZETTE—Suspenders, braces, belts, etc. Faire Bros. & Co., Limited, 2 Southampton street, and St. Georges Mills, Leicester.

August 12, 1925

458,890 Hexagonal shield in dark color, with white rim; in center are words: ESSEX MOTORS in white letters in two lines—motor cars. Essex Motors, 12601 East Jefferson avenue, Detroit, Michigan, U. S. A.

460,123 BUBBLE BOAT—bathing floats, being sporting articles included in Class 49. The Bathing Yacht Manufacturing Co., Limited, Criterion Chambers, 10 and 11 Jermyn street, Piccadilly Circus, London, S. W. 1.

460,362 TUFOSOL—all goods included in Class 40, I. T. S. Rubber Co., Limited, 42 Great Russell street, London, W. C. 1.

August 19, 1925

454,360 ANALIT—all goods in Class 40. Magyar Ruggyantaarugyar Reszvenytarsasag, 17 Kerepesint, Budapest X, Hungary.

456,587 GOODYEAR—tyres in which india rubber is the main material and rubber inner tubes. The Goodyear Tire & Rubber Co., 1144 East Market street, Akron, Ohio, U. S. A.

B457,711 Oblong square enclosing the words: The "RANEGARDE" SHOWERPROOF, A. W. Gamage, Ltd., Holborn, E. C. 1 in different sizes and style of type and arranged somewhat fancifully—rainproof coats, A. W. Gamage, Limited, 118 to 128, Holborn, London, E. C. 1.

458,780 MAXFORT—all goods included in Class 40. The Dunlop Rubber Co., Limited, Fort Dunlop, Erdington, Birmingham.

459,477 UNIC—goods manufactured from india rubber not included in classes other than Class 40. Unic Motors, Limited, 18 Brewer street, Buckingham Palace Road, London, S. W. 1.

August 26, 1925

448,502 Word: WARNER'S in semi-script—corsets, brassiers, etc. The Warner Brothers' Co., 325 Lafayette street, Bridgeport, Connecticut, U. S. A.

451,452 AJAX—Rubber tyres for bicycles and motor cycles. Charles Louis Cuthbe, trading as Chas. L. Cuthbe & Co., 37 Great Eastern street, London, E. C. 2.

451,526 NIXOLE—Stocking protector, made of rubber. Paul Montravel Tennick, 56 Woodstock Road, Bedford Park, London, W. 4.

458,431 LEOPARD crouching upon a limb of a tree which is laid along the top of a large oblong square. Inside the square appear boughs, leaves, a shield in blank; on the right side in small letters the words: Fitted with 14ct. Gold Nib Iridium Pointed; below, in open face letters, the words: Lever Self-Filling Fountain Pen and below again, the words Fills instantly every Pen Fully Guaranteed. Made in England. Reservoir pens made in England and included in Class 39. The Mentmore Manufacturing Co., Limited, Tudor Grove, Well street, Hackney, London, E. 9.

459,004 MEAD—Tyres, tyre air tubes, handle bar grips, brake blocks, etc., all of india rubber. Mead Cycle Co., Incorporated, 2 Fallows Road, Sparkbrook, Birmingham, and 23 to 27 North Clinton street, Chicago, Illinois, U. S. A.

459,049 GUTTALEX—Aqueous emulsions of gutta percha, resins, Balata and india rubber resins, for use in manufactures. Rubber Industries, Limited, Downham Mills, Chestnut Road, Tottenham, London.

459,554. RAM-SHARE—weatherproof and waterproof garments. Myer Rotenberg, 32 Cluny street, Cheetham, Manchester.

460,287 KOH-I-NOR—Puncture closing compositions. George Moore Smith, Annesley House, Exley Lane, Elland, Yorkshire.

New Zealand

July 30, 1925

B21,824 Word: KLEINERT'S in script with end of last letter running back under the word—dress shields, crib sheets and other goods in Class 40. I. B. Kleinert Rubber Co., 485 Fifth avenue, New York, N. Y., U. S. A.

22,671 FLOAT-ON-AIR—india rubber inflatable cushions. David Moseley and Sons, Ltd., Chapel Field Works, Ardwick, Manchester.

22,740 THE SWAN—fountain pens, etc. all the goods being included in Class 39. Mabie, Todd & Co., Ltd., 133 and 135 Oxford street, London, W. 1.

22,741 Representation of a Crow with a white spot on the neck standing upon an inverted triangle; the upper part of which consists of a black stripe with the word: JACKDAW in white letter and the point of the triangle, pointing downward, is white—fountain and stylograph pens included in Class 39. Mabie, Todd and Co., 133 and 135 Oxford street, London, W. 1.

Designs

The United States

67,971 Pneumatic tire. Term 14 years. Victor A. Parker, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

67,975 Tire. Term 14 years. Reuben Roden, assignor to Hattie W. Roden, both of Grand Rapids, Michigan.

67,980 Toy balloon. Term 14 years. Arthur P. Witten, Akron, Ohio.

68,013 Tire tread. Term 14 years. Harold D. Reichard, assignor to The Akron Standard Mold Co., both of Akron, Ohio.

68,074 Pneumatic tire. Term 3½ years. Herbert A. Winkelmann, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

68,110 Resilient tire. Term 14 years. Stephen S. Miller, assignor to The Mohawk Rubber Co., both of Akron, Ohio.

68,150 Tire. Term 14 years. Wilbur F. Love, assignor to Goodyear Tire & Rubber Co., both of Akron, Ohio.

The Dominion of Canada

6,794 Solid rubber tire. Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ontario.

6,796 Radiator shell for motor vehicles. The Peerless Motor Car Co., Cleveland, Ohio, U. S. A.

6,798 Advertising toy, consisting of a BEE mounted on a base around which is a rubber band. The Montreal Lithographing Co., Limited, Montreal, Quebec.

Germany

912,574 (April 28, 1925). Horse shoe with exchangeable solid rubber bead. Conrad Quednau, Zoppot. Represented by Felix Scheffler, Glieniche bei Berlin, Nordbahn.

912,771 (March 5, 1925). Rubber disk and metal plate inserts as protectors for heels or soles. Ludwig Kaufmann, B. 7, 10, and Walter Toni Müller, N. 2, 13, Mannheim.

912,826 (May 11, 1925). Sanitary bandage of fabric with rubberized fabric protector. Therese Köhler, König Georgstrasse 88, Plauen i. V.

912,962 (May 12, 1925). Rubber wire conductor. Naamlooze Vennootschap Hollandsche Draad-en Kabelfabriek, Amsterdam, Holland. Represented by H. Nähler, F. Seemann and Vorwerk, Berlin S. W. 11.

913,017 (April 23, 1925). Occlusive pessary. Dr. Heinrich Offergeld, Venloerstrasse 155, Cologne.

913,106 (December 11, 1924). Protective body cover of elastic webbing. Reinh. Spitzbarth, Zeulenroda, Thuringia.

913,148 (February 6, 1925). Mushroom-shaped rubber buffer for furniture legs. Willy Tschepel, Friedenstrasse 12-13, Berlin-Adlershof.

913,194 (May 15, 1925). Rubber bathing cap. Phil. Penin Gummiwaren-Fabrik A.-G., Leipzig-Plagwitz.

913,361 (May 11, 1925). Webbing for rubber stocking and the like. Firma Hermann Köhler, Zeulenroda, Thuringia.

913,414 (April 22, 1925). Pillow of sponge rubber. Max Naumann, Grimma.

913,424 (May 4, 1925). Bathing cap. Gummiwarenfabrik M. Steinberg, Köln-Lindenthal.

913,450 (May 29, 1925). Air cushion. Vereinigte Berlin-Frankfurter Gummiwaren-Fabriken, Berlin-Lichterfelde.

913,796 (May 20, 1925). Rubber heel. Paul Franzen, Comphausbadstrasse 30, Aachen.

913,826 (May 16, 1925). Tube wire with rubber covering. Dr. R. Apt, Klingerstrasse 2, Berlin-Treptow.

913,996 (May 22, 1925). Inflatable swimming ring with bands. E. Kübler & Co., m. b. H., Berlin-Reinickendorf.

914,062 (March 2, 1925). Blotter with sponge rubber sheet between roll and blotting-paper. Louis Ebert, Augsburgerstrasse 28, Dresden.

914,154 (May 20, 1925). Ball with covering of marbleized rubber sheet. Continental-Caoutchouc und Gutta-Percha-Compagnie, Hannover.

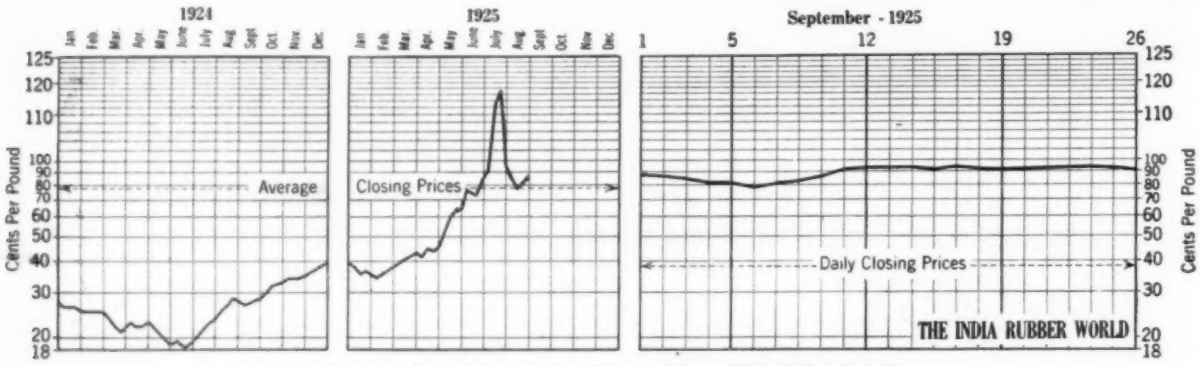
914,255 (May 23, 1925). Rubber band with advertisement printed thereon as safety closing for match boxes. Karl Hartmann, Rauxel b. Dortmund.

914,334 (May 23, 1925). Rubber retrieving implement for dogs, in the shape of a dumbbell. E. Kübler & Co., m. b. H., Berlin-Reinickendorf.

914,436 (April 22, 1925). Rubber cap for bakers, confectioners and butchers. Gummiwarenfabrik. M. Steinberg, Köln-Lindenthal.

914,478 (May 26, 1925). Rubber buffer for windshields of motor vehicles. William Jacob, Dresdenerstrasse 94-95, Berlin.

914,557 (February 17, 1925). Arrangement for attaching ties to shirt buttons by means of a bow of elastic. C. Bergmann, Meissen.



Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

COMPARISON of the local market prices for spot ribbed smoked sheets of September with those for August shows that for the first week of each month prices were essentially the same and declined from 90 to 80 cents a pound. In the three succeeding weeks values registered a strong advance reaching the 90 cent level September 11 and maintaining 92 to 95 cents the entire two weeks prior to September 26. Closing prices for spot ribs ranged downward from September 1 when they were 88 cents buyers, 89 cents, sellers, to September 5 when the record was 80 cents buyers, 81 cents sellers. Following Labor Day prices advanced rapidly reaching on September 12, 94 cents buyers, 95 cents, sellers. This level was fairly well sustained and was 90 to 92 cents on September 26.

American consumers showed only moderate interest in the situation and reports indicate a substantial decrease in consumption during the next few months. Under these conditions with normal shipments from the East stocks may shortly increase, but the margin of safety is still very narrow with the tendency undecided and the market easily swayed.

Factory interest in spot rubber is not keen. Buyers are endeavoring to moderate their consumption of rubber and have restricted purchases to immediate or close by needs. There are practically no sales at present of October-December position because dealers are anticipating a squeeze when factories become interested in the January-March position for spring manufacturing operations. New York arrivals for October are expected to show a heavier total than those for September which were of moderate proportions.

Parás have held steady and firm in sympathy with plantations but are somewhat neglected. Balatas are offered but find a weak market.

Importations of all grades in August were 31,584 tons, compared with 20,076 tons one year ago. Plantation arrivals for August were 29,921 tons, compared with 18,397 tons one year ago. Total importations of plantation rubber for eight months ended August 31 were 231,467 tons, compared with 183,598 tons for the corresponding period of 1924. Total importations of all grades of rubber for the eight months ended August 31, 1925, were 247,289 tons compared with 194,861 tons for the corresponding period of last year.

London

The course of prices during September began at 43*d* the first of the month, gradually falling off in the first two weeks to 40½*d* and as gradually regaining the level of 42*d* at the close of the following two weeks. Early in the month prices were weakened by profit taking on the part of speculators.

Following the American holiday prices declined under lack of buying support and on September 9 were 38½*d* for spot ribbed smoked sheets. At this point report of the figures of American consumption sent the price upward and the market became firm and continued so through the third and fourth weeks of the month. Some of this firmness and advance was attributable to the drop in London stocks as shown by the figures reported September 14. Future positions also shared in the advance.

The weekly reports of London stocks show a drop of 1,000 tons during the last week of August which has since been replaced bringing the stocks on September 21 equal to those of the corresponding date of August. The weekly stocks were as follows: August 24, 5,396 tons; August 31, 4,400 tons; September 7, 5,032 tons; September 14, 5,699 tons; September 21, 5,232 tons.

Singapore

The market for September began steady at 37⅛*d* buyers for ribs, an advance of 1¼*d* over August 31. Soon, however, the price weakened on poor foreign support, aided by bearish selling. The lowest prices occurred September 9 in sympathy with the

New York Spot Closing Rubber Prices

PRICES IN CENTS, PER POUND

PLANTATIONS	August, 1925													September, 1925									
Sheet	17	18	19	20	21	22	24	25	26	27	28	29	31	1	2	3	4	5	8	9	10	11	12	14
Ribbed smoked	78¼	80½	80¾	83½	82½	82½	82	82½	85¼	85¼	85¼	87¼	90	88¼	87¼	85	81¼	81¼	78¼	80½	83	86½	92	92½
Crêpe																								
First latex	78¼	80¼	80¾	84¾	84	84	83½	83¾	87¼	87¼	87¼	89½	91¾	89¾	88¾	87½	83¼	83¼	79¼	81½	85	88	94	93
Off latex	75¼	78½	78½	81¼	80½	80¾	80½	81	84¼	84	84	85¾	88	87	86	84¼	80	80	75½	76¾	80¾	83¼	91	89¾
No. 2 blanket	70¼	72½	70¼	73¾	72¾	73¼	72¾	73½	75¾	75¾	75½	77½	81	78¾	78	76¾	72¾	72¼	73¾	75½	75¼	79	78¼	79½
No. 3 blanket	68¼	70½	69	71½	70½	70¾	70½	71½	74¾	74½	73½	75¼	79½	76¾	76	75¾	70¾	70¾	71¾	73½	73¾	77	76¼	77½
No. 4 blanket	66¼	68½	67	69½	68½	68¾	68½	69½	71	71¼	71¼	73¾	75¾	74¾	74	72	68¼	68¾	69¾	71½	71¾	75	74¼	75¾
Thin, clean brown	68½	70¾	70¾	73½	72½	72¾	72½	72¾	75¾	75½	75½	77½	80½	78½	78	77	73	73	72¼	75	75¾	79	78¼	78
Rolled brown	52¼	54¼	53½	58½	57¼	57¾	57¼	57½	60½	61	60¼	62¾	63¼	63	62	60¾	59	59	52¾	52½	53¼	55½	61½	57⅛

London market. Recovery followed and prices became firm and advancing as demand increased. Firmness was further increased by diminished shipments from the plantations during the week ending September 19, and causing a decrease in spot offerings until on September 24 trading was practically at a stand still with buyers quotations for spot at 36⅛*d*.

Standard Production Under Restriction

Under the Stevenson plan of restriction, which became effective November 1, 1922, the standard production for the first restriction year was estimated at 274,000 tons and scale increases will enlarge standard production for the third year by about 10,000 tons over that of the second year.

The figures for the three years are approximately as follows: November 1, 1922, to October 31, 1923, 274,000 tons; November 1, 1923, to October 31, 1924, 246,000 tons; November 1, 1924, to October 31, 1925, 256,000 tons.

Comparative Low and High New York Spot Rubber Prices

	September		
PLANTATIONS	1925*	1924	1923
First latex crêpe	$0.80 @ $0.96	$0.27 @ $0.28½	$0.28⅛ @ $0.30¼
Smoked sheet, ribbed	.79 @ .95	.26½ @ .28	.28¼ @ .30¼
PARAS			
Upriver, fine	.68 @ .75	.27 @ .30	.26½ @ .28¼
Upriver, coarse	.45 @ .49½	.16¾ @ .17½	.22 @ .24¼
Islands, fine	.60 @ .68	.22 @ .23	.25 @ .26¼
Islands, coarse		.15 @ .15½	.13 @ .14¼
Cametá	.36 @ .40	.14¾ @ .16	.13½ @ .15¼

* Figured to September 26, 1925.

British Malaya

Rubber Exports

An official cablegram from Singapore to the Malay States Information Agency, Cannon Street, London, E. C. 4, England, states that the rubber exported from British Malaya in the month of August last totalled 27,753 tons. The amount of rubber imported was 12,025 tons of which 10,174 tons were declared as wet rubber. The following are comparative statistics:

	1924		1925	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Imports Tons
January	23,844	8,867	19,183	10,132
February	19,395	7,440	21,622	10,071
March	22,294	8,269	26,836	13,399
April	20,551	7,909	22,414	11,750
May	19,674	7,259	26,667	12,979
June	18,084	7,435	27,894	14,706
July	21,670	9,777	24,809	16,192
August	22,133	9,776	27,753	12,025
Totals	167,645	66,732	197,178	101,254

Distribution

The following is a comparative return of distribution of shipments during the months of July and August, 1925:

Destination	July, 1925 Tons	August, 1925 Tons
United Kingdom	3,082	5,963
U. S. A.	18,033	17,885
Continent of Europe	2,650	2,824
British Possessions	160	323
Japan	833	755
Other Foreign Countries	51	3
Totals	24,809	27,753

JAPAN'S PLANTING INVESTMENTS

Japanese enterprise established its first rubber plantation in Malaya as early as 1906. At present 37 Japanese concerns have invested a total of $34,771,870 in plantations in Malaya, Sumatra and Borneo. The potential output from these estates is put at 9,240 tons for 1924; however, since that year as well as the current year have not been favorable for Japan's rubber-manufacturing industry and many concerns have suspended operations temporarily while others had to go out of business, all of this crop was not harvested.

New York Quotations

Following are the New York spot and future rubber quotations, for one year ago, one month ago, and September 25, the current date:

	Sept. 25, 1924	Aug. 25, 1925	Sept. 25, 1925
Plantation Hevea			
Rubber latex (Hevea)....*gal.*	$1.30 @	$2.75 @	$3.00 @
CREPE			
First latex, spot	.28¼ @ .28⅛	.83 @ .85	.88 @ .89
Aug.-Sept.	@	.80 @ .82	.87 @ .88
Oct.-Dec.	.28⅛ @	.67 @ .68	.78 @ .79
Jan.-March	.28½ @	.61 @ .62	.69 @ .70
Jan.-June	@	.60 @ .60½	.65 @ .66
Off latex, spot	.28 @	.82 @	.87 @ .88
Amber No. 2, spot	.27¼ @ .28	.74 @	.75 @ .76
Aug.-Sept.	@	.70 @	.74 @ .75
Oct.-Dec.	.27¼ @	.64 @	.61 @ .62
Jan.-March	.28 @	.52 @	.60 @ .61
Jan.-June	@	.50 @	.58 @ .59
Amber No. 3, spot	.27½ @ .27¼	.73 @	.74 @ .75
Brown, thin, clean	.27½ @	.72 @	.73 @ .74
Brown, specky	.27¼ @	.70 @	.70 @ .71
Brown, rolls	.26½ @	.58 @	.54 @ .55
Sole crêpe	.45 @ .46	.86 @	1.00 @
SHEET			
Ribbed, smoked, spot	.28 @	.82 @ .83½	.88 @ .89
Aug.-Sept.	@	.79 @ .80	.87 @ .88
Oct.-Dec.	.28 @	.67 @ .68	.78 @ .79
Jan.-March	.28⅜ @	.61 @ .63	.69 @ .70
Jan.-June	@	.60 @ .60½	.65 @ .66
East Indian			
PONTIANAK			
Banjermassin	.05¼ @ .06	.10¾ @	.14 @
Palembang	.08 @	@	@
Pressed block	.12¾ @ .13	@	.22 @
Sarawak	.06 @	.08 @ .09	.14 @
South American			
PARAS			
Upriver, fine	.27½ @	.72 @	.73 @
Upriver, fine	*.37¾ @	*.95 @	*.94 @
Upriver, medium	.25 @	.65 @	.68 @
Upriver, coarse	.17½ @	.51 @	.47 @
Upriver, coarse	*.28 @	*.80 @	*.72 @
Islands, fine	.24 @	.61 @	.63 @
Islands, fine	@	@	*.91½ @
Islands, medium	.23 @	@	.62 @
Islands, coarse	.16 @	.36 @	@
Cametá	.14½ @	.35 @	.37 @ .38
Acre, Bolivian, fine	.27¾ @	.72 @	.73½ @
Acre, Bolivian, fine	*.38 @	*.95 @	*.95 @
Beni Bolivian	.27¾ @ .28	.72½ @	.73½ @
Madeira, fine	.28 @ .28½	.73 @	.73½ @
Peruvian, fine	.27¼ @	.67 @	.70 @
Tapajos, fine	.27¼ @	.65½ @	.68 @
CAUCHO			
Upper caucho ball	.17½ @	.52 @	.48 @
Upper caucho ball	*.28 @	*.80 @	*.72 @
Lower caucho ball	.15¾ @	.49 @	.45 @
Maniçobas			
Ceará negro heads	†.14 @	.50 @	@
Ceará scrap	†.08 @	.40 @	@
Maniçobas 30% guaranty	†.19 @	.45 @	@
Mangabeira, thin sheet	†.22 @	.45 @	@
Centrals			
Central scrap	.19 @	@	@
Central wet sheet	.14 @	.44 @	@
Corinto scrap	.19 @	.49 @ .50	@
Esmeralda sausage	.19 @	@	@
Guayule washed and dried	.25 @	.50 @	.45 @
Africans			
Black Kasai prime	.20 @ .21	.64 @	.74 @
Red Kasai	.19 @ .20	.59 @	@
Black Upper Congo	.20 @ .21	@	.74 @
Red Upper Congo	.19 @ .20	@	.65 @
Kasai Loanda	@	@	@
Upper Congo Arumini	@	@	@
Masai (Konakry)	@	@	@
Gutta Percha			
Gutta Siak	.17 @	.22 @	.22 @
Gutta Soh	.26 @	.30 @	.30 @
Red Macassar	3.00 @	3.50 @	3.00 @
Balata			
Block, Ciudad Bolivar	.65 @ .66	.63 @ .64	.64 @
Colombia	.55 @ .56	.54 @	@
Panama	.55 @ .56	.54 @	@
Surinam, sheet	.76 @ .77	.77 @	.75 @
amber	.79 @ .80	.82 @	@
Chicle			
Honduras	‡.58 @ .68	‡.58 @ .68	‡.58 @ .68
Yucatan, fine	‡.58 @ .68	‡.58 @ .68	‡.58 @ .68

*Washed and dried crêpe. Shipment from Brazil.
†Nominal. ‡Duty paid.

Reclaimed Rubber

During the past month New York quotations have settled due to the return of scrap prices to a reasonable basis. This readjustment to normal levels has been made although the demand for reclaim greatly exceeds the producing capacity. Consumption of reclaim is proceeding at a heavier rate than ever before known. This demonstrates that rubber manufacturers fully appreciate the value of reclaim in relation to the crude rubber situation.

All reclaiming plants are running to capacity on standard grades. The quotations given below are nominal.

New York Quotations

September 26, 1925

Auto Tire			
Black	lb.	$0.10¼ @	$0.11
Black, washed	lb.	.12 @	.12½
Black, selected tires	lb.	.12½ @	.13¼
Dark gray	lb.	.14½ @	.15
Light gray	lb.	.15½ @	.16
White	lb.	.18½ @	.19
High Tensile Black			
Super-reclaim, No. 1	lb.	.26½ @	.27½
No. 2	lb.	.16 @	.17
Shoe			
Unwashed	lb.	.10¼ @	.10¼
Washed	lb.	.13½ @	.14
Tube			
No. 1	lb.	.26 @	.27
No. 2	lb.	.18½ @	.19½
Uncured Tire Friction			
No. 1	lb.	.50 @	.55
No. 2	lb.	.38 @	.41
Miscellaneous			
High grade, red	lb.	.17¼ @	.17¾
Truck tire	lb.	.10½ @	.11
Mechanical blends	lb.	.07½ @	.08½

IMPORTS OF CRUDE RUBBER AND RELATED GUMS

During the first half of 1925 the United States imported, according to the Bureau of Foreign and Domestic Commerce, 426,352,828 pounds of crude rubber, value $147,129,244. Imports during this period of liquid latex totaled 4,306,664 pounds, value $998,517. The chief sources of supply for crude rubber were: Straits Settlements, 240,424,872 pounds, value $81,908,080; the United Kingdom, 52,684,750 pounds, value $20,834,250; Java and Madura, 38,550,753 pounds, value $12,422,585; other Dutch East Indies, 38,012,147 pounds, value $12,826,322; Ceylon, 31,777,428 pounds, value $11,321,150; and Brazil, 16,502,336 pounds, value $4,822,832.

Imports of jelutong during the six months totaled 8,030,394 pounds, value $844,793; guayule, 3,363,458 pounds, value $607,849; gutta percha, 1,455,077 pounds, value $234,996; and balata, 303,890 pounds, value $134,374. Imports of other crude, scrap, and reclaimed rubber were estimated at 7,566,238 pounds, value $351,226.

LARGER EXPORTS OF RUBBER FROM BRAZIL

Statistics show that Brazil's foreign trade during 1924 represents an increase both in exports and imports as compared with the four years preceding. A gain in value of rubber exports is included, the 1924 figures reaching 21,568 tons, value £1,962,000. Under the influence of high prices, the trade of the Pará district has been particularly good during the first quarter of 1925, increasing approximately 50 per cent over the corresponding quarter of 1924. For the entire Amazon Valley the crude rubber exports, according to *Commerce Reports*, amounted during January-March, 1925, to 9,513,686 pounds, as compared with 6,831,311 pounds for the March, 1924, quarter.

AMERICAN EXPORTS OF RECLAIMED RUBBER TOTALED FOR THE twelve months ended June 30, 1925, 6,972,561 pounds, value $659,023, while corresponding exports during the period of scrap and old rubber were estimated as being 29,271,866 pounds, value $1,204,812.

The Market for Rubber Scrap

A month ago business in rubber scrap was slow due to absence of consuming demand from the market. Prices then began a downward tendency from the unusually high levels. This continued until the present reasonable quotations were established later in the month. Reclaimers are now in the market and there is more inquiry for export. High crude rubber prices have brought out an abundant supply of scrap which is being consumed in very large tonnages in the effort to meet the needs of the rubber manufacturers.

BOOTS AND SHOES. These grades are moving in fair volume at prices slightly above those quoted a month ago.

INNER TUBES. Tubes have dropped one cent in price and with mixed tires constitute the main volume of the reclaimers' demand for scrap.

MIXED TIRES. All grades are moving in tremendous tonnage. It is from these that the bulk of high grade reclaim is being produced.

AIR BRAKE HOSE AND MECHANICALS. These qualities are in fair request. Current quotations on market classifications of scrap rubber are as follows:

Quotations for Carload Lots

September 26, 1925

Boots and Shoes			
Boots and shoes, black	lb.	$0.03½ @	$0.03¼
Red and white	lb.	.02½ @	.02⅝
Trimmed arctics, black	lb.	.02¾ @	.02⅝
Untrimmed arctics	lb.	.02¼ @	.02⅜
Tennis shoes and soles	lb.	.01½ @	.01⅝
Hard Rubber			
No. 1 hard rubber	lb.	.14 @	.16
Battery jars, black compound	lb.	.02½ @	.02¾
Inner Tubes			
No. 1, floating	lb.	.11 @	.12
No. 2, compounded	lb.	.08¾ @	.09
Red	lb.	.06½ @	.07
Mixed tubes	lb.	.07¼ @	.07½
Mechanicals			
Mixed black scrap	lb.	.01¼ @	.01½
Heels	lb.	.01 @	.01½
Hose, air-brake	ton	28.00 @	30.00
regular	ton	20.00 @	22.00
No. 1 red	lb.	.03¼ @	.03½
No. 2 red	lb.	.01¾ @	.02¼
Red packing	lb.	.01½ @	—
White, druggists' sundries	lb.	.07 @	.08
Mechanical	lb.	.02¾ @	.04
Tires			
Pneumatic Standard—			
Mixed auto tires with beads	ton	28.00	@30.00
Beadless	ton	37.00	@39.00
White auto tires with beads	ton	45.00	@55.00
Beadless	ton	70.00	@75.00
Mixed auto peelings	ton	37.00	@39.00
Solid—			
Mixed motor truck, clean	ton	49.00	@52.00

FALL MEETING OF N. A. W. M. D.

The Fall meeting of the National Association of Waste Material Dealers, Inc., will be held October 6 at the Hotel Peabody, Memphis, Tennessee, while the next meeting of the Western division will probably be held in Chicago on October 8. It is believed that the South and Southwest will be well represented at the Memphis sessions.

RUBBER DIAPHRAGM IN SAFETY DOOR

The new buses of the Kansas City Railway will be equipped with a system designed not only to prevent passengers from getting on or off while the vehicle is in motion, but also to stop the car automatically if the driver becomes incapacitated. For this latter purpose an emergency valve provided with a rubber diaphragm is used to apply brakes and unlock the doors when the driver must relinquish control. When the brakes are off and there is no air in the brake line, the air is prevented from going through the relay valve and the doors cannot then be opened.

The Market for Chemicals and Compounding Ingredients

New York

THE belated but moderate seasonal reduction in the production of rubber goods has been in progress this past month. Even in the important tire and tube section of the industry the curtailment is of moderate proportions. Production is expected to continue at the present rate during the fall months. The demand is strong for compounding ingredients, particularly cheap fillers, reinforcing materials. This movement is supported by the continued high price of crude rubber and is especially notable in the case of mineral rubber which is now being used in record proportions.

ACCELERATORS. This class of material has become quite as essential as sulphur in rubber goods because of the efficiency of rapid low temperature cures and the improvement gained in tensile properties of the cured product.

ANILINE. The summer demand for aniline was steady and moderate both in volume and price.

ANTI-OXIDANTS. This class of compounding ingredients has been developed to give aging quality to rubber goods by protecting the rubber content from deterioration by oxidation. The importance of this result gives anti-oxidants a technical importance rivaling that of accelerators and destines them for popular favor in all lines of soft rubber working.

BENZOL. New coke ovens coming into service have as yet not notably increased the benzol supply. The demand exceeds the supply and the price remains unchanged.

CARBON BLACK. About the middle of September the price of carbon black was advanced one cent a pound due to the reduction by nearly 25 per cent in the volume of gas that may be consumed in Louisiana for the production of carbon black. The daily allowance of gas for six months from September 1 is 175,000,000 cubic feet.

CLAY. The well established qualities are generally accepted in the major branches of the rubber industry, particularly in tires and mechanicals. They are moving in heavy tonnages especially for mechanicals.

LITHARGE. Firmness marked the market for all lead oxides a month ago. The demand for litharge slowed down following the increase in price of ¼-cent a pound at that time. A second increase of the same amount was announced during the third week of September due to the high price of pig lead.

LITHOPONE. The demand for this material by rubber manufacturers has been better than it was a year ago, and the market generally is active with production sold up for balance of the year.

SUBLIMED LEAD. The consuming demand has been moderate and routine.

SOLVENT NAPHTHA. Supplies continue light and production limited. The price advanced 1 cent a gallon on September 1.

ZINC OXIDE. All grades have been steady. The middle of the month 35 per cent leaded oxide advanced seven-eighths of a cent a pound. Other grades are unchanged.

New York Quotations

September 26, 1925

Accelerators, Inorganic

Lead, carbonate	lb.	$0.10¼	@
Lead, red	lb.	.12¼	@
sublimed blue	lb.	.10	@
sublimed white	lb.	.10	@
Lime, R. M.	lb.	.01¼	@
R. M. hydrated	ton	15.00	@
superfine	lb.	.01½	@ .02
Litharge	lb.	.11¾	@
Magnesia, carbonate	lb.	.07	@ .07½
calcined, light (bbls.)	lb.	.24	@ .25
calcined, ex. light (bbls.)	lb.	.40	@
calcined, md. light (bbls.)	lb.	.15	@
calcined, heavy (bbls.)	lb.	.04	@ .04½
magnesium, carb., light (bags)	lb.	.06¾	@ .07
Orange mineral A.A.A.	lb.	.14½	@
Rubber lead No. 4	lb.	.30	@

Accelerators, Organic

A-7	lb.	.75	@ .85
A-19	lb.	.85	@ .95
Aldehyde ammonia	lb.	.93	@
No. 101	lb.		@
Aniline (factory)	lb.	.17	@ .17½
B. B.	lb.	1.07	@
Benzidine (base)	lb.	.75	@ .78
Benzyl aniline	lb.		@
Cryline	lb.		@
paste	lb.		@
powder	lb.		@
D. P. G. salt	lb.	.89	@
Diethyl amine	lb.		@
Dimethyl amine	lb.		@
Dimethylaniline	lb.	.58	@ .60
Di-ortho-tolylguanidine	lb.	1.13	@
Di-ortho-tolylthiourea	lb.		@
Diphenyl guanidine	lb.	.98	@
Ethyl aniline	lb.		@
Ethylidene aniline	lb.	.65	@
Ethyl-o-toluidine	lb.		@
Excellerex	lb.		@
Formaldehyde aniline	lb.	.42½	@
Hexamethylene tetramine	lb.	.82½	@
No. 102	lb.		@
Lead oleate (fact'y)	lb.	.18	@
Methylene aniline	lb.	.32	@ .37
Methylenedianilide	lb.		@
No. 999	lb.	.17	@
No. 552 Piperidine piperidyldithio-carbamate	lb.		@
Para-nitrosodimethylaniline	lb.		@
Paraphenylene diamine	lb.		@
Quinodine	lb.	.40	@
Shawinigan paraldehyde	lb.		@
Super-sulphur, No. 1	lb.	.50	@ .55
No. 2	lb.	.20	@ .30
Tensilac No. 41	lb.	.65	@
Thiocarbanilide	lb.	.26	@ .32
Trimene	lb.		@
Trimene base	lb.		@
Triphenylguanidine	lb.	$0.73	@
Tuads	lb.	5.00	@
Vulcone	lb.		@
Zimate	lb.	5.00	@

Acids

Acetic 28% (bbls.)	100 lb.	3.38	@
glacial (carboys)	lb.	.16	@
Cresylic (97% straw color)	gal.	.57	@ .62
(95% dark)	gal.	.55	@ .60
Sulphuric, 66° (carboys)	lb.	.02	@

Alkalies

Caustic soda	100 lbs.	3.10	@ 4.75
flake, 76% (factory)	100 lbs.	4.16	@ 4.31
solid, 76% (factory)	100 lbs.	3.76	@ 3.91

Anti Oxidants

V. G. B.	lb.	.70	@

Colors

BLACK

Bone	lb.	.05½	@ .11
Carbon:			
A. & W. nonfil.	lb.	.40	@
Aerfloted arrow	lb.	.08	@ .13
Compressed	lb.	.07	@ .12½
Uncompressed	lb.	.07	@ .12
Micronex	lb.	.09	@ .13
Drop	lb.	.06	@ .10
Lampblack	lb.	.12	@ .14
Shawinigan	lb.		@
Thermatomic carbon	lb.	.04	@

BLUE

A. & W. blue	lb.	2.00	@ 4.00
Cobalt	lb.		@
Prussian	lb.	.34	@ .35
Ultramarine	lb.	.08	@ .35

BROWN

Iron oxide	lb.		@
Sienna, Italian	lb.	.04	@ .14
Umber, Turkey	lb.	.04	@ .06

GREEN

A. & W. green	lb.	2.00	@ 3.00
Chrome, light	lb.	.28	@ .30
medium	lb.	.30	@ .32
dark	lb.	.31	@ .34
commercial	lb.	.09	@ .10½
Oxide of chromium	lb.	.33	@ .38
T. K.	lb.	.35	@ .40

RED

Antimony, golden	lb.	$0.16	@
golden T. K.	lb.	.18	@ .21
pentasulphide	lb.	.33	@ .35
golden R.M.P. No. 7	lb.	.18	@
golden 15/17 % G. E.	lb.	.26	@ .30
Antimony, sulph. crimson	lb.	.27	@
crimson T. K., 15/17%	lb.	.40	@ .43
crimson T. K., S/F.	lb.	.48	@ .50
crimson, 15/17% G. E.	lb.	.42	@ .45
crimson, R.M.P. No. 3	lb.	.48	@
7-A	lb.	.35	@
Z-2	lb.	.18	@

Antimony

A. & W. red (4 shades)	lb.	1.50	@ 3.00
purple	lb.	2.00	@ 3.00
Arsenic, red-sulphide	lb.	.12	@ .12½
Sulphuret vermilion	lb.	.50	@

Iron oxides

bright red pure domestic	lb.	.11	@ .12
bright red pure English	lb.	.11	@ .14
bright red reduced English	lb.	.07½	@ .11
bright red reduced domestic	lb.	.07	@ .11
Indian (maroon), red pure domestic	lb.	.10	@ .11
Indian (maroon), red pure English	lb.	.09½	@ .12
Indian (maroon), red reduced English	lb.	.07½	@ .09
Indian (maroon), red reduced domestic	lb.	.08	@ .10
Oximony	lb.	.13¼	@
Spanish red oxide	lb.	.02½	@ .04½
Venetian reds	lb.	.02½	@ .05
Yellow oxide pure	lb.	.08	@ .10
Pará toner	lb.	1.00	@ 1.15
Toluidine toner	lb.	2.00	@ 2.25
Vermilion, English quicksilver	lb.	1.40	@ 1.60

WHITE

Akcolith	lb.		@
Albalith	lb.	.05⅞	@ .06⅛
Aluminum bronze	lb.		@
Lithopone	lb.	.05⅝	@ .06⅛
Azolith	lb.	.05⅝	@ .06⅛
Grasselli	lb.	.05¾	@ .06⅛
Imported prime	lb.	.05½	@
Sterling	lb.	.05⅝	@ .06⅛
Zinc oxide			
AAA (lead free)	lb.	.07¼	@ .07¾
Azo (factory):			
ZZZ (lead free)	lb.	.07¼	@ .07¾
ZZ (5% leaded)	lb.	.06⅞	@ .07¼
Z (8% leaded)	lb.	.06⅞	@ .07⅛

Chemical Market—*Continued*

New York Quotations

September 26, 1925

Colors			
WHITE—*Continued*			
French process, Florence brand			
Green seal	lb.	$0.10⅞ @	$0.11⅛
Red seal	lb.	.09⅞ @	.10⅛
U. S. P.	lb.	.14¼ @	.16½
White seal	lb.	.11⅞ @	.12⅛
Horse Head brands			
Selected	lb.	.08 @	.08¼
Special	lb.	.08 @	.08¼
XX red	lb.	.07½ @	.07¾
Leaded brands			
Lehigh	lb.	.08 @	.08½
Standard	lb.	.07⅞ @	.07⅞
Sterling	lb.	.08 @	.08½
Superior	lb.	.08 @	.08½
Palmerton process			
Kadox, black	lb.	.10⅞ @	.11⅛
blue	lb.	.09⅞ @	.10⅛
red	lb.	.08⅞ @	.09⅛
YELLOW			
A. & W. yellow	lb.	2.50 @	4.00
Arsenic	lb.	.70 @	.75
Chrome	lb.	.17½ @	.18½
Ochre, domestic	lb.	.01½ @	.02½
imported	lb.	@	
Compounding Ingredients			
Aluminum flake (sacks c.l.)	ton	21.85 @	
(sacks l.c.l.)	ton	24.50 @	
Aluminum silicate	ton	25.00 @	
Ammonia carbonate	lb.	.12 @	.13½
Are-o-sole	ton	10.00 @	14.00
Asbestine	ton	13.50 @	14.50
Barium, carbonate (bbl.)	ton	54.00 @	56.00
dust	lb.	.05 @	.06
Barytes, imported	ton	33.00 @	
water ground and floated	ton	23.00 @	26.00
Basofor	lb.	.04½ @	
Blanc fixe, dry	ton	75.00 @	85.00
pulp	ton	55.00 @	60.00
Carrara filler	lb.	.02 @	
Chalk	ton	4.75 @	5.00
Clay, Dixie	ton	20.00 @	35.00
Blue ribbon (c. l. fcty.)	ton	14.00 @	
Blue Ridge, dark	ton	9.00 @	
light	ton	12.00 @	
Catalpo (facty.)	ton	35.00 @	38.00
China	lb.	.01¼ @	
English	lb.	.02 @	.02½
Langford	ton	.12 @	
Cotton flock, black	lb.	.12 @	
light-colored	lb.	.12 @	.13
white	lb.	.15 @	.30
Cotton linters clean mill run	lb.	.06 @	.06½
Glue, high grade	lb.	.21 @	.29
medium	lb.	.18 @	.24
low grade	lb.	.14 @	.17
Graphite, flake	lb.	.04 @	.07
Mica, amber (fact'y)	lb.	.05 @	
water ground	lb.	.07 @	.08
Pumice stone, powd.	lb.	.03 @	.05
Rotten stone (bbls.)	lb.	.02½ @	.04½
Slate flour (fact'y c. l.)	lb.	8.00 @	9.00
Soap bark, cut	lb.	.09¼ @	.09½
Soapstone	ton	15.00 @	22.00
Sodium bicarb. (bbls.) 100 lbs.		2.00 @	
Starch, pcwd. corn			
Buffalo (bbls.) 100 lbs.		3.94 @	
(bags) 100 lbs.		3.67 @	
Talc, French	lb.	.01¼ @	.02
Italian	lb.	.02 @	.03½
Terra blanche	ton	20.00 @	25.00

Chemical Market—*Continued*

New York Quotations

September 26, 1925

Compounding Ingredients—*Continued*			
Whiting, domestic No. 33	ton	$10.00 @	
chalk, L. H. B.	ton	17.00 @	25.00
commercial (facty.) 100 lbs.		.90 @	1.00
English, cliffstone 100 lbs.		1.60 @	2.00
gilders (bolted) 100 lbs.		1.25 @	1.35
Nelco	ton	12.00 @	22.50
Paris White 100 lbs.		1.60 @	2.00
Perfection	ton	13.00 @	20.00
Quaker	ton	13.00 @	15.00
Snow-white, E. L. B.	ton	14.00 @	25.00
Sussex	ton	8.00 @	10.00
Witco (c.l.)	ton	12.00 @	
Wood pulp, XXX (facty.)	ton	35.00 @	
X (facty.)	ton	25.00 @	
Mineral Rubber			
Genasco (facty.)	ton	@	
Gilsonite	lb.	.03½ @	
Granulated M. R.	ton	35.00 @	45.00
Hydrocarbon, hard	ton	29.00 @	35.00
Hydrocarbon, soft	ton	29.00 @	35.00
Mineral flour	ton	@	
Ohmlac Kapak, M-R	ton	70.00 @	80.00
K-4	ton	175.00 @	
320/340 m. p. hydrocarbon	ton	47.00 @	52.00
300/310 m. p. hydrocarbon	ton	42.00 @	47.00
Paradura	ton	70.00 @	75.00
Pioneer, M. R., solid (fac.)	ton	42.00 @	44.00
M. R. granular	ton	52.00 @	54.00
Robertson, M. R. solid (facty.)	ton	35.00 @	75.00
M. R. gran. (facty.)	ton	42.00 @	80.00
Rubrax (facty.)	ton	@	
Oils (Softeners)			
Avoilas compound	lb.	.12 @	.14
Castor, No. 1, U. S. P.	lb.	.16 @	
No. 3, U. S. P.	lb.	.15½ @	
Corn, crude (bbls.)	lb.	.12 @	
Cotton, summer yellow	lb.	.11 @	
Cycline	gal.	.31 @	.37
Glycerine	lb.	.20 @	.20½
Linseed, raw	gal.	1.03 @	
Liquid rubber	lb.	.12 @	
Moldrite	lb.	.05 @	.06
Palm lagos	lb.	.09⅝ @	
Palm, niger	lb.	.09 @	
Parra M. R. flux	lb.	.06 @	.07
Peanut, crude	lb.	.10½ @	
refined	lb.	.15½ @	
Petrolatum, standard	lb.	.06 @	.08
Petrolatum, sticky	lb.	.08 @	.10
Pine, steam distilled	gal.	.60 @	.65
Rapeseed, refined	gal.	1.06 @	
blown	gal.	1.20 @	
Rosin	gal.	.58 @	.62
Soya bean	lb.	@	
Synthecite	lb.	.06 @	
Tar	gal.	.28 @	.36
Woburn	lb.	.05 @	

Resins and Pitches			
Pitch, Burgundy	lb.	$0.07½ @	
coal tar	lb.	.01⅝ @	
Fluxol hardwood	lb.	.02 @	.04
pine tar	lb.	.04 @	
ponto	lb.	.07½ @	
Rosin, K (bbl.) 280 lbs.		16.60 @	
strained (bbl.) 280 lbs.		15.70 @	
Shellac, fine orange	lb.	.70 @	
Tar, pine, retort	bbl.	15.00 @	17.50
kiln	bbl.	14.50 @	18.25
Solvents			
Benzol (90%, 7.21 lbs. gal.) pure	gal.	.29 @	
Carbon bisulphide (10.81 lbs. gal.) 99.9% pure (drums)	lb.	.06½ @	.07
tetrachloride (13.28 lbs. gal.) 99.7% pure (drums)	lb.	.07 @	.08
Gasoline No. 303			
Tankcars	gal.	.21 @	
Drums, c. l.	gal.	.24 @	
Drums, l. c. l.	gal.	.27 @	
Motor gas (steel bbls.)	gal.	.20 @	
Naphtha		@	
68° Bé., 122°, 324°	gal.	.20 @	
70° Bé., 114°, 314°	gal.	.21 @	
71° Bé., 112°, 304°	gal.	.22 @	
Turpentine, spirits	gal.	1.18 @	
wood, steam distilled	gal.	1.00 @	
Substitutes			
Black	lb.	.08½ @	.15
Brown	lb.	.10 @	.16
White	lb.	.10½ @	.17½
Brown T. K.	lb.	.10½ @	.14
White T. K.	lb.	.13½ @	.16½
Vulcanizing Ingredients			
Sulphur chloride (drums)	lb	.07 @	
Sulphur, soft rubber, 100% pure (c.l.) 100 lbs.		2.35 @	2.60
(l.c.l.) 100 lbs.		2.65 @	2.90
Sulphur, Brooklyn brands			
Refined velvet (bbls.) 100 lbs.		@	
(bags) 100 lbs.		@	
Superfine flour (bbls.) 100 lbs.		@	
(bags) 100 lbs.		@	
rubber makers	lb.	.02¾ @	.03
Tire brand, superfine 100 lbs.		2.00 @	2.25
Tube brand, velvet 100 lbs.		2.40 @	2.65
(See also Colors—Antimony)			
Waxes			
Wax, beeswax, white, com.	lb.	.55 @	
carnauba	lb.	.30 @	.40
ceresine, white	lb.	.12 @	
montan	lb.	.06 @	.06¼
ozokerite, black	lb.	.30 @	
green	lb.	.32 @	
Paraffin			
122/124 white crude scale	lb.	.05¼ @	.05¾
124/126 white crude scale	lb.	.05¾ @	.05⅞
120/122 fully refined	lb.	.06 @	.06⅛
125/127 fully refined	lb.	.06⅛ @	.06¼

Seventh International Exhibition of Rubber and Other Tropical Products

Under the patronage of the president of the French Republic, the Seventh International Exhibition of Rubber, Other Tropical Products, and Allied Industries will be held January 21 to February 6, 1927, at the Grand Palais, Paris, France. The various displays will be under the auspices of the Ministry of Colonies, the Ministry of Foreign Affairs, and the Ministry of Commerce and Industry. Lord Colwyn will act as honorary president of the exposition, Sir Wyndham R. Dunstan as honorary vice-president, and M. Paul Painlevé as honorary president of the international conferences.

LITHEX

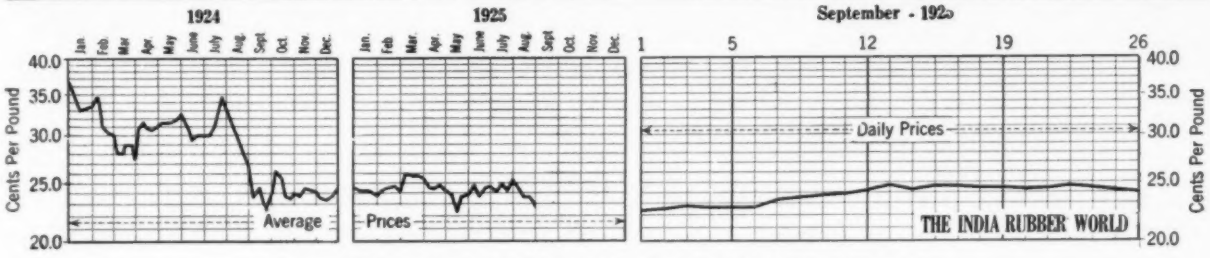
Lithex is a coaccelerator for litharge. It offers those who use large amounts of litharge a safe means of reducing it. The reduction in litharge is accompanied by a reduction of specific gravity and cost—both desirable from the standpoint of manufacturer and consumers of rubber goods alike. The Lithex-Litharge combination is best adapted for use in mechanical goods and cable insulation.

RUBBER LEAD No. 4

A new vulcanizing accelerator combining organic and mineral constituents has recently become available under the designation Rubber Lead No. 4. It is manufactured by precipitating a disubstituted guanidine on a rubber-lead base. The gravity of litharge is nearly 10 times that of water while that of rubber-lead is less than 4 times that of water.

SYNTHECITE

Synthecite is a rubber softener composed essentially of the distillate from vulcanized rubber in which are combined vegetable oils and waxes. In addition to its softening effect in a rubber mixing it prevents the cured compound from sticking in the mold. It has the further advantage of being very low in price.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. Since September 1 the price of spot middlings, then at 22.35 cents, has advanced steadily and on September 21 was 24.30 cents. The government crop report placed the condition of the crop as of September 1 at 13,740,000 bales. This estimate was below expectations based on private reports and further deterioration is feared because of the continuance of drouth conditions in Texas and in the south Atlantic states area.

The government report issued September 23 gave the crop condition as 53.6 per cent normal and an acreage yield of about 143.5 pounds an acre. This indicates a crop of 13,931,000 bales, an advance of 191,000 bales over the estimate reported September 1. These figures served to slow the cloth market temporarily which was exhibiting increased demand following the earlier reduction in crop estimates.

PIMA COTTON. The Pima variety of American Egyptian cotton has been grown for several years in the Salt River Valley, Arizona, and until recently the growers, cooperating with the U. S. Department of Agriculture, were able to maintain a very pure quality of planting seed. Last year short staple cotton was grown in all parts of the valley and as a result much of the seed used for planting this spring was more or less mixed.

EGYPTIAN COTTON. Government estimate places the current season's crop at 7,273,000 cantars, equivalent to 720,000,000 pounds. This is the largest cotton crop in its history. The upper crop is already an assured success, and first arrivals have been received in Alexandria.

In the long staple situation there has been little change. Prices have remained firm notwithstanding favorable crop prospects both here and abroad. At present Egyptians are held at a considerable premium over American staples which has resulted in a lack of business in actual cotton in Alexandria. Thus far reports indicate that the quality of the Egyptian crop is good, and picking has become general. Medium uppers are worth about 35 cents and medium Sakellaridis about 50 cents.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The demand is sharp especially for delivery over the next three months. There is an increasing disposition for the large operators to make engagement for a portion of their requirements for the first quarter of 1926. Prices are firm and advancing with less inclination on the part of manufacturers to push sales because of orders already taken. The market is in better tone and position than it has been since November, 1924, which marked the peak of the demand of last autumn and the beginning of the decline which terminated last June.

RAINCOAT FABRICS. Business has been very good in this line for the past few months and the trade in general look for a very active season. Credits are in much better shape than they have been for a long time which denotes profitable merchandising.

SHEETINGS. Very good business has characterized sheetings in recent weeks. The market is firm and prices advancing. Deliveries from mills in South Carolina and northern Georgia are curtailed due to the severe general drouth which has recently hampered the hydro-electric power output. Higher prices are indicated.

TIRE FABRICS. The market is slightly more active but prices are still below levels that show profit to mills. If current cotton price levels continue to prevail fabric prices will strengthen because the mills are not thought to be generally well covered as to cotton requirements. The tendency among consumers is to take 1 3/16 to 1¼-inch staple American cottons instead of Egyptian uppers on account of the difference of about 5 cents a pound in the raw cotton in favor of the American staple.

New York Quotations

September 26, 1925

Drills

38-inch 2.00-yard	yard	$0.21¼ @
40-inch 3.47-yard		.12⅝ @
52-inch 1.90-yard		.23⅜ @
60-inch 1.52-yard		.29¼ @

Duck

38-inch 2.00-yard	yard	.22¼ @
40-inch 1.47-yard		.29⅞ @
72-inch 16.66-ounce		.51½ @
72-inch 17.21-ounce		.54 @
MECHANICAL		
Hose and belting	pound	.43 @
Specials		.47 @
TENNIS		
52-inch 1.35 yard	yard	.33¾ @

Hollands

DEAD FINISH		
Standard, 37-inch	yard	.19½ @
42-inch		.23½ @
RED SEAL		
36-inch		.18 @
40-inch		.19 @
50-inch		.30 @
FLAT FINISH		
Imperial, 36-inch		.15½ @
40-inch		.17½ @

Osnaburgs

40-inch 2.35-yard	yard	.19½ @
40-inch 2.48-yard		.18 @
40-inch 3.00-yard		.14⅝ @
37-inch 2.42-yard		.18¾ @

Raincoat Fabrics

COTTON		
Bombazine 64 x 60	yard	.13 @
Bombazine 60 x 48		.12 @
Plaids 60 x 48		.12¾ @
Plaids 56 x 44		.12¾ @
Surface prints 60 x 48		.13 @
Surface prints 64 x 60		.14 @

Sheetings, 40-inch

40 x 48, 2.50-yard	yard	.15¼ @
48 x 48, 2.85-yard		.13¼ @
64 x 68, 3.15-yard		.14½ @
56 x 60, 3.60-yard		.12 @
48 x 44 3.75-yard		.11 @

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	$0.08⅞ @
40 x 40, 6.15-yard		.07¼ @

Tire Fabrics

SQUARE WOVEN 17¼-ounce			
Egyptian, karded	pound	.60 @	.61
Peeler, karded		.47 @	.49
CORD 23/5/3			
Egyptian, combed	pound	.75 @	.78
Egyptian, karded		.62 @	.64
Peeler, combed, 1 1/16-in.		.72 @	.74
Peeler, karded, 1 1/16-in.		.53 @	.54
CORD 13/3/3			
Peeler, karded	pound	.48 @	.50
LENO BREAKER			
8-oz. Peeler, karded	pound	.48 @	.50
10-oz. Peeler, karded		.48 @	.50
CHAFER			
8.25-oz. Peeler, karded (2 ply)	pound	.47 @	.48
9.5-oz. Peeler, karded (4 ply)		.50 @	.51
12-oz. Peeler, karded		.50 @	
14-oz. Peeler, karded		.50½ @	

The Cotton Outlook

United States Crop Estimate 13,931,000 Bales

THE United States Crop Reporting Board estimates that the condition of the cotton crop on September 16 was 53.8 per cent of normal, as compared with 62.0 per cent on August 16, 65.6 per cent on August 1, and 59.3 per cent on September 1, 1924.

Total production, it is estimated, will be about 13,931,000 500-pound bales, as compared with an indicated yield of 13,990,000 bales on August 16, 13,566,000 bales on August 1, and an actual yield of 13,627,936 bales last year and 10,139,671 bales in 1923.

While the September 16 estimate represents a decrease of 250,000 bales from the estimate of August 16, it is an increase of 191,000 bales above that of August 1. The decline in estimated yield is ascribed chiefly to drouth and extreme heat throughout a large part of the cotton belt.

Judging from the relation of August condition to final yields in former years, the condition of 53.8 per cent indicates an average yield per acre of 143.5 pounds, as compared with 157.4 pounds in 1924 and a ten-year average of 154.

Ginnings of this year's crop to September 1 totaled 1,892,549 running bales, counting round as half bales, as compared with 947,494 bales to September 1, 1924, and 1,142,660 bales to that date in 1923. The increase to about double last year's ginnings on September 1 is largely the result of favorable market conditions.

22 Per Cent More Cotton Used in Six Months

The world's mill consumption of cotton for the six months ended July 31 is estimated by the International Federation of Master Spinners' Association at 12,000,000 bales, an increase of 22 per cent over the corresponding period last year, and 7 per cent more than during the half year ended January 31, 1925.

World consumption of American cotton, included in these figures, is placed at 7,022,000 bales for the six months ended July 31, compared with 6,232,000 bales for the half year ended January 31, 1925.

World mill stocks were 4,264,000 bales on August 1, 1925, or 20 per cent more than on August 1, 1924, and 9 per cent more than on January 31, 1925.

Stocks of American cotton in the mills of the world increased from 1,326,000 bales on August 1, 1924, to 1,815,000 bales on August 1, 1925, but on the latter date showed a decrease of 22 per cent from January 31, 1925.

As to the probable future trend of American consumption, after months of slack operations, and despite considerable uncertainty regarding cotton supplies, New England textile mills are anticipating a quickening of business. Plants lately idle or running on part time are reopening or speeding up operations, and from all the leading centers comes a note of hopefulness which should find expression in substantial increases of cotton consumption.

While active buying is expected soon, low August cotton receipts in New England, which were smaller than for the same month in any season since that of 1918-19, reflect the coming crop uncertainty but seem to indicate that spinners are expecting ample supplies. In view of this fact mill men generally assert that the basis is too high and that cotton prices, not mill profits, must be reduced. This they assert can be brought about not at the expense of the farmer but through better agricultural methods which will increase the yield per acre.

United States Cotton Exports

Exports of raw cotton from the United States for the first time in ten years passed the 8,000,000 bale mark in 1924-25 and approached the pre-war average. They totaled 8,205,000 running bales, compared with 5,732,000 bales in 1923-24, 5,066,000 bales in 1922-23, and 6,542,000 bales in 1921-22. They exceeded the post-war annual average by 2,014,000 bales, or 33 per cent, and came within 209,000 bales, or 2 per cent, of the pre-war figure.

Compared with the preceding year, Europe took 2,139,000 bales more, the increase going largely to the United Kingdom (928,000 bales more) and Germany (520,000 bales more). Exports to the other European countries likewise showed material increases—those to France were 188,000 bales larger, those to Italy 184,000 bales larger, and to Spain 70,000 bales larger than in 1923-24. Shipments to Russia were more than doubled, and Japan took 261,000 bales more than it did the year before. Until recent years American cotton reached Russia indirectly.

Provisions of the Cotton Standards Act

The most important provisions of the United States Cotton standards act are the following:

It is provided in substance that it shall be unlawful in or in connection with any transaction or shipment in interstate or foreign commerce, or in any publication of a price or quotation, or in any classification for the purposes of or in connection with any such transaction or shipment, for any person to indicate for any cotton a grade or other class which is of or within the official cotton standards of the United States then in effect, by a name, description, or designation not used in those standards; it being provided, however, that these prohibitions shall not prevent a transaction otherwise lawful by actual samples or on the basis of a private type which is used in good faith and not in evasion of or substitution for the standards.

The owner or custodian of the cotton, or any person having a financial interest in it, is given the privilege of submitting such cotton or samples thereof to the United States Department of Agriculture for determination of the true classification. The final certificate of the department showing the classification of cotton so submitted is declared to be prima facie evidence in United States courts of the true classification of such cotton and binding upon Federal officers.

The Secretary of Agriculture is authorized to examine and license cotton classers who, depending upon the character of the licenses which they hold, may issue certificates of the grade, staple, or other class of the cotton examined by them. Licenses are issued according to the applicant's qualifications and may authorize the grading or classification of cotton according to one or more of the following official standards:

1. Official cotton standards of the United States for grades and colors of American upland cotton, known as the Universal Standards for American Cotton.
2. Official cotton standards of the United States for grades and colors of American Egyptian cotton.
3. Official cotton standards of the United States for length of staple.

Service and Regulatory Announcement No. 92 of the United States Department of Agriculture contains the act in full, all of the complete standards, the agreement between the Department of Agriculture and European cotton associations and exchanges, and other detailed supplemental matter.

Southwest Cotton Situation

The 1925 crop of cotton in the Southwest is being grown on 491,500 acres, but while this is an increase of only 9.2 per cent in acreage the production is expected to reach 343,200 bales, or 32 per cent more than that of 1924, on account of favorable weather and improved cultivation. In the California field the San Joaquin Valley will lead with an expected yield of 90,000 bales

from 90,000 acres. Last year the valley produced 35,757 bales from 36,200 acres. Only the Acala variety is grown here, being thus restricted by state law. At Los Angeles harbor, where a compress has been installed, over 75,000 bales were handled for shipment to Atlantic and Oriental ports last year, but this year the local cotton merchants predict the amount that will be moved through the harbor will exceed 125,000 bales, made up from the crops of California, Arizona, and Lower California.

Growers and merchants estimate that the entire southwest crop will be disposed of at a price range between 22 and 25 cents a pound.

Increasing Cotton Production in Brazil

Brazil is rapidly coming to the front as a cotton producing nation; in fact, it is the only important cotton producing country showing a large increase in production over the past fifteen years. Although it may take time, there are evidences that cotton may some day rank close to coffee as the leading agricultural crop.

The average pre-war cotton crop of Brazil amounted to 322,000 bales. In 1921-22, however, 505,000 bales were grown; in 1922-23, 553,000 bales; in 1923-24, 719,000 bales. About 80 per cent of the cotton production is consumed by the rapidly growing Brazilian textile industry.

Natural conditions favor cotton culture, especially in southern Brazil, although there are numerous disadvantages to be overcome, the most serious of which is probably the shortage of labor. While yields per acre average high, there, is unfortunately, a complete absence of uniformity of fiber among Brazilian cottons, but the government is making strenuous efforts to improve cotton growing conditions. Herbaceous American cotton varieties are grown for the most part, although in northeastern Brazil, Moco tree cotton is grown with remarkable immunity from insect pests and with a staple averaging 1½ inches.

JAPAN'S FOOTWEAR IMPORTS

While American-made rubber footwear has a good reputation in Japan, imports, though sufficiently large to make that country an important market for America, have been limited by the cheapness of the locally made article. Duty, too, is very high, particularly so in the case of rubber soled canvas footwear which is subject to a duty of 100 per cent ad valorem, as a result of which American competition in this article is badly hampered.

The prevailing low rate of the yen is an added handicap as thereby local producers are enabled to offer a satisfactory rubber shoe at a third less than the American article. Thus an American rubber boot retailing at 9 yen (yen = $0.4188 at current rates) must compete with a fairly good locally made boot selling at 6 to 6.50 yen.

United States exports of rubber footwear to Japan follow:

	1922		1923		1924	
	Pairs	Value	Pairs	Value	Pairs	Value
Boots	74,784	$181,584	81,185	$145,733	56,856	$116,317
Shoes	142,678	123,014	161,903	142,422	111,175	101,332
Canvas	17,516	12,858	2,238	2,529	2,786	2,325

The official Japanese figures of imports of rubber footwear for 1922 to 1924 below do not include imports at the port of Yokohama during 1922 and during the first eight months of 1923 as the records for that period were destroyed in the earthquake and fire of September 1923.

	1922		1923		1924	
	Kin	Yen	Kin	Yen	Kin	Yen
Rubber boots from—						
United States	16,782	36,917	83,461	154,491	.....	.....
Other countries	3	8	921	1,969	.....	.....
	16,785	36,925	84,382	156,460	202,991	395,426
Rubbers from—						
United States	30,148	65,084	134,769	190,145	.....	.....
Other countries	4,083	8,547	499	957	.....	.....
	34,231	73,631	135,268	191,102	160,282	342,333

Metal Market Review

New York

While there has been no particular activity during September in the non-ferrous metals, the prices have continued strong, and in most cases higher. Steel ingot output during August was a surprise to producers, there being an increase of 11 per cent over the 68 per cent operations of July. The first half of September, according to *The Iron Age*, duplicated in nearly every particular the steel market features of the second half of August.

ALUMINUM. Conditions in this market continue unchanged, with prices remaining at 27 to 28 cents per pound for the virgin metal, delivered. It has been said that if any change does come, it will be dictated by conditions in the copper industry.

ANTIMONY. Quotations during the middle of September were firm at 17.12½ cents to 17.25 cents, New York, for spot delivery of Chinese metal, with later arrivals quoted at 16.75 cents to 17 cents, duty paid.

COPPER. Some advance in prices followed the publication of estimates by the American Bureau of Metal Statistics regarding stocks of refined copper. The record stated that such stocks on August 31 last amounted to 154,686,000 pounds compared with 176,010,000 pounds in July, a decrease of 21,324,000 pounds. This was said to be the smallest surplus reported in many years, while the copper situation is also being benefited by smaller production. Largely due to the expansion of the electrical and automobile industries, the consumption of copper in the United States has grown from 362,125 tons in 1913 to 686,364 tons in 1924.

LEAD. The demand for lead continues to increase, while the higher prices prevailing recently have stimulated mining, many new properties now being worked. Europe is said to be in urgent need of this metal, all lead received going immediately into consumption.

TIN. There was a good demand for this metal during the middle of September, while prices improved uniformly both in London and the United States. The world's visible supply of tin at the close of August totaled 20,000 tons, against 19,857 tons the month previous and 21,302 tons a year ago.

ZINC. Quotations during September compared well with the high of the year of 7.90 cents. The stability of prices was the outstanding feature of the market.

Basic Metals

September 22, 1925

	Cents per pound
Aluminum, virgin, 98@99 per cent	27.00 @28.00
Antimony	16.875 @17.125
Copper—Lake, spot	14.750 @14.875
Electrolytic, spot	14.625 @14.750
Castings, refinery	14.125 @
Lead, spot, New York	9.50 @ 9.625
Lead, spot, East St. Louis	9.25 @ 9.30
Tin, spot	58.750 @
Zinc, spot, New York	8.175 @
Zinc, spot, East St. Louis	7.825 @ 7.85

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER

	Cents per pound
Bright basic	4.25 @
Annealed soft	4.50 @
Galvanized annealed	5.15 @
Coppered basic	5.15 @
Tinned soft Bessemer	6.15 @

*Regular extras for lighter gage.

Copper Wire

BASE PRICE F. O. B. FACTORY

	Cents per pound
Bare copper wire	17.00 @
No. 6 B. & S. gage	17.00 @
No. 8 B. & S. gage	17.00 @
No. 14 B. & S. gage	18.00 @

AS COMPARED WITH MAY, 1924, THE COMBINED EXPORTS FROM THE United States of tires and tubes for May, 1925, at $2,345,805, represented a gain of about 45 per cent.

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth and Rubberized Fabrics Value
EUROPE												
Austria	$100	.....	.....	.....	900	$1,816	5,412	$6,946	.....	.....	.....	$218
Azores & Madeira Islands	.....	.....	.....	.....	.....	.....	.....	.....	90	$125	$63	.....
Belgium	5,044	$4,505	$158	$8,927	444	1,631	24	20	72	105	174	2,278
Bulgaria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Czechoslovakia	.....	255	.....	.....	.....	.....	24	14	.....	.....	720	451
Denmark	520	725	198	.....	876	2,636	6,024	5,788	120	128	2,949	.....
Finland	2,114	65	32	.....	.....	.....	.....	.....	.....	.....	1,597	.....
France	17,212	992	3,255	47,051	184	508	2,472	2,073	.....	.....	.....	360
Germany	719	.....	1,151	.....	7,524	14,132	38,546	39,002	2,583	1,953	.....	7,181
Greece	.....	733	.....	.....	.....	.....	.....	.....	.....	.....	.....	301
Hungary	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iceland & Faroe Islands	.....	.....	.....	.....	319	626	2,255	4,804	.....	.....	.....	.....
Italy	.....	800	.....	4,708	1,056	3,796	17,307	13,230	96	240	181	.....
Latvia	2,483	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Malta, Gozo, and Cyprus Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22
Netherlands	494	6,488	.....	1,171	114	412	.....	.....	368	373	610	236
Norway	4,426	1,888	.....	.....	.....	.....	264	319	624	356	288	562
Poland and Danzig	136	.....	.....	.....	.....	.....	3,052	1,526	.....	.....	.....	.....
Portugal	50	.....	.....	.....	.....	.....	.....	.....	243	141	.....	514
Rumania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Russia in Europe	.....	2,239	.....	1,664	.....	.....	.....	.....	.....	.....	.....	.....
Spain	509	.....	384	13,877	30	100	.....	.....	.....	.....	252	170
Sweden	5,071	3,780	331	.....	3,274	10,022	.....	.....	.....	.....	8,138	2,321
Switzerland	25	.....	1,100	.....	.....	.....	480	362	48	39	22	464
Turkey in Europe	.....	789	.....	.....	626	1,874	.....	.....	.....	.....	.....	.....
United Kingdom	20,692	46,919	14,332	46,892	55,049	103,825	31,727	30,045	8,980	8,676	455	18,084
Yugoslavia, Albania, etc	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$59,595	$70,178	$20,941	$124,290	70,396	$141,378	107,587	$104,129	13,224	$12,176	$15,449	$33,162
NORTH AMERICA												
Canada	$30,473	$11,216	$13,417	$4,236	1,493	$7,035	403	$605	4,792	$2,256	$1,943	$21,155
British Honduras	57	3	41	.....	.....	.....	.....	.....	106	182	.....	.....
Costa Rica	443	764	.....	.....	.....	.....	72	65	268	201	1,195	.....
Guatemala	42	44	669	.....	.....	.....	24	35	3,003	1,952	865	.....
Honduras	544	572	387	.....	.....	.....	354	142	453	436	1,200	.....
Nicaragua	225	198	150	.....	.....	.....	246	269	858	745	1,072	113
Panama	41	2,630	649	.....	48	173	121	89	6,964	4,036	535	511
Salvador	1,239	.....	.....	81	.....	.....	3	2	2,352	1,377	863	.....
Mexico	22,660	21,574	8,178	98	257	918	675	878	68,062	51,036	26,161	7,998
Miquelon and St. Pierre Islands	.....	.....	.....	.....	438	1,413	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador	463	2,573	23	.....	3,106	8,122	264	397	656	379	325	37
Bermuda	.....	61	12	.....	.....	.....	.....	.....	953	877	32	.....
Barbados	.....	52	16	.....	.....	.....	.....	.....	515	401	.....	63
Jamaica	71	241	225	.....	.....	.....	.....	.....	9,397	7,424	201	209
Trinidad and Tobago	91	592	579	.....	.....	.....	.....	.....	695	449	170	192
Other British West Indies	37	940	37	.....	.....	.....	.....	.....	1,816	1,419	39	40
Cuba	1,959	19,245	6,870	.....	400	978	288	184	65,268	36,275	3,321	5,650
Dominican Republic	11	408	153	.....	.....	.....	360	277	7,239	5,192	744	356
Dutch West Indies	.....	293	38	.....	.....	.....	.....	.....	27,900	17,092	176	79
French West Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Haiti	204	126	.....	.....	.....	.....	124	80	8,159	6,698	515	55
Virgin Islands of U. S.	.....	.....	.....	.....	.....	.....	.....	.....	466	544	123	.....
TOTALS, NORTH AMERICA	$58,560	$61,532	$31,444	$4,417	5,742	$18,639	2,934	$3,023	209,912	$138,971	$39,480	$36,458
SOUTH AMERICA												
Argentina	$22,851	$14,164	$626	$240	100	$268	375	$736	92,800	$48,500	$9,566	$16,003
Bolivia	2,566	.....	.....	.....	.....	.....	.....	.....	76	55	31	.....
Brazil	12,422	5,558	1,419	.....	.....	.....	1,125	775	4,178	2,514	2,340	2,864
Chile	4,334	5,725	2,856	.....	43	370	.....	.....	1,440	1,252	517	2,063
Colombia	1,964	827	817	.....	.....	.....	1,998	1,496	30,393	20,109	6,533	1,158
Ecuador	.....	.....	1,073	.....	38	145	.....	.....	100	170	834	.....
British Guiana	.....	541	213	.....	.....	.....	.....	.....	192	106	.....	23
Dutch Guiana	3,401	20	.....	.....	.....	.....	.....	.....	158	151	71	.....
Paraguay	.....	.....	71	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	1,327	1,803	2,245	.....	78	611	120	101	723	683	213	1,494
Uruguay	.....	.....	78	.....	84	340	.....	.....	3,296	2,223	3,683	4,464
Venezuela	824	987	1,651	175	2	8	950	469	72	71	2,944	1,198
TOTALS, SOUTH AMERICA	$49,689	$29,625	$11,049	$415	350	$1,742	4,568	$3,607	133,428	$75,934	$26,732	$29,267
ASIA												
Aden	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	$6,216	$4,746	$268	.....	5,261	$8,177	2,447	$1,704	6,852	$5,800	.....	$2,539
Ceylon	.....	.....	.....	.....	.....	.....	.....	.....	168	101	.....	574
Straits Settlements	308	3,322	.....	.....	.....	.....	.....	.....	2,323	1,644	$226	164
China	1,569	1,609	3,738	.....	.....	.....	7,692	8,137	1,570	1,444	150	4,545
Chosen	.....	25	584	.....	.....	.....	.....	.....	.....	.....	.....	.....
Java and Madura	2,861	1,195	244	.....	.....	.....	.....	.....	1,388	2,025	1,025	4,614
Other Dutch East Indies	671	570	178	.....	.....	.....	.....	.....	144	275	.....	394
French Indo-China	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	223
Hejaz, Arabia, etc	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	.....	.....	.....	.....	24	73	2,056	1,793	448	460	.....	292
Japan	1,707	7,234	6,619	$4,439	720	2,004	168	140	.....	.....	.....	1,038
Kwangtung, leased territory	68	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Palestine and Syria	384	65	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Persia	62	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philippine Islands	7,219	6,045	1,946	.....	.....	.....	264	240	72,853	55,281	$3,041	1,675
Siam	.....	.....	.....	.....	.....	.....	.....	.....	1,006	691	.....	.....
TOTALS, ASIA	$21,065	$24,811	$13,577	$4,439	6,005	$10,254	12,627	$12,014	86,752	$67,721	$4,442	$16,058
OCEANIA												
Australia	$8,670	$14,312	$4,188	.....	588	$1,730	960	$476	5,345	$3,648	.....	$6,571
British Oceania	.....	.....	.....	.....	.....	.....	.....	.....	730	559	.....	.....
French Oceania	.....	28	.....	.....	.....	.....	.....	.....	367	294	.....	.....
New Zealand	.....	1,169	1,270	.....	12	81	.....	.....	180	228	$200	2,173
Other Oceania	.....	36	.....	.....	.....	.....	.....	.....	646	637	.....	39
TOTALS, OCEANIA	$8,670	$15,545	$5,458	.....	600	$1,811	960	$476	7,268	$5,366	$200	$8,783

United States by Countries During July, 1925

Waterproofed Outer Garments Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Solid Tires: Automobile and Motor Truck Number	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Tire Rubber Accessories, Repair Materials Value	Hard Rubber Goods: Electrical Supplies Value	Hard Rubber Goods: Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
.....	206	$1,908	.....	$718	.....	.....	.....	.....	.....	.....	.....	$225	.....	.....	$463
.....	53	573	.....	63	.....	.....	.....	.....	$13	.....	.....	.....	.....	.....	.....
.....	2,613	48,094	.....	5,592	.....	8	$564	.....	1,466	.....	.....	116	$1,072	$453	51
.....	62	727	.....	218	.....	.....	.....	$252	14	.....	.....	.....	.....	.....	.....
.....	864	14,198	$382	1,580	$96	30	1,458	.....	29	.....	$56	.....	238	.....	.....
.....	11,202	95,850	.....	20,091	.....	4	224	.....	2,508	.....	2,476	.....	1,931	575	316
.....	1,486	23,353	80	2,896	.....	.....	.....	.....	494	.....	.....	.....	.....	.....	670
.....	2,409	31,681	.....	4,890	.....	.....	.....	.....	7,833	$1,259	30	434	4,279	1,275	18
.....	2,780	45,398	793	12,616	121	.....	.....	.....	2,032	.....	.....	500	2,059	.....	2,809
$212	737	12,353	.....	14,179	.....	359	12,635	.....	1,554	.....	.....	.....	.....	.....	.....
.....	15	210	.....	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	25	360	.....	213	.....	.....	.....	.....	36	.....	.....	.....	.....	.....	.....
.....	171	2,710	.....	802	42	.....	.....	.....	457	.....	.....	600	580	.....	802
.....	192	2,832	.....	852	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	216	2,152	.....	108	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	2,765	37,288	347	5,137	34	12	375	6	2,329	.....	.....	73	355	30	2,949
.....	2,255	32,595	.....	2,508	.....	8	302	.....	66	.....	17	.....	408	.....	260
.....	20	179	.....	94	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	562	6,848	.....	1,489	.....	.....	.....	.....	235	.....	.....	144	340	.....	.....
.....	85	1,001	.....	507	.....	18	590	.....	.....	.....	.....	.....	.....	.....	.....
60	319	5,228	208	1,431	33	.....	.....	.....	.....	.....	.....	.....	48	.....	.....
.....	962	16,418	.....	1,934	.....	56	2,036	.....	1,447	108	.....	900	.....	.....	1,646
.....	4,241	73,490	124	7,325	.....	.....	.....	.....	3,217	60	.....	.....	2,122	.....	148
.....	532	12,393	57	1,055	.....	.....	.....	.....	.....	.....	.....	.....	86	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	1,771	.....	.....	.....	.....	.....	.....
503	19,706	203,822	765	14,355	.....	1,431	30,556	.....	12,777	2,998	14,756	11,109	35,070	2,664	42,188
.....	20	347	.....	147	.....	.....	.....	.....	130	.....	.....	.....	.....	.....	100
$775	54,498	$672,008	$2,756	$100,824	$326	1,926	$48,740	$258	$38,408	$4,425	$17,335	$14,101	$48,588	$4,997	$52,420
$1,635	2,492	$34,903	$970	$3,896	$13	119	$2,680	$458	$18,038	$15,224	$6,470	$289	$22,830	$983	$8,729
108	51	661	.....	225	.....	2	55	.....	21	.....	.....	.....	54	.....	.....
3,304	117	2,234	.....	239	.....	4	106	196	15	.....	5	.....	95	.....	32
1,196	282	5,285	.....	828	.....	.....	.....	212	176	.....	.....	.....	145	135	335
550	56	1,379	.....	178	.....	30	1,360	.....	.....	.....	466	26	155	.....	36
10	63	859	.....	273	.....	.....	.....	.....	83	.....	191	.....	10	.....	90
1,160	988	9,976	279	805	3	112	1,595	.....	88	.....	11	372	1,173	261	24
30	354	6,865	166	1,631	36	2	32	.....	91	.....	.....	.....	85	.....	60
4,874	7,836	92,780	984	16,837	.....	328	6,344	356	3,620	211	910	568	4,343	29	6,097
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6,862	229	2,964	.....	449	17	2	69	54	249	.....	155	12	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	162	.....	.....	.....	.....	38	.....	.....
.....	102	1,233	.....	145	.....	17	320	.....	21	.....	.....	.....	.....	.....	.....
157	100	1,228	.....	118	.....	133	2,460	61	118	.....	.....	.....	71	.....	36
.....	267	3,185	.....	550	.....	18	353	.....	136	.....	37	.....	.....	.....	.....
45	154	2,172	.....	375	.....	2	70	51	.....	22	.....	12	71	.....	.....
8,102	5,215	59,110	2,565	12,484	125	634	24,170	1,531	2,681	316	963	1,754	4,005	42	1,239
1,031	2,125	21,320	.....	3,998	.....	216	6,095	239	239	.....	14	.....	885	.....	.....
169	443	4,389	36	723	.....	2	33	.....	26	.....	2	.....	.....	.....	.....
.....	76	852	.....	.....	.....	4	84	.....	.....	.....	.....	.....	.....	.....	.....
19	348	5,441	.....	1,108	.....	.....	.....	439	42	.....	.....	30	206	.....	.....
.....	75	908	.....	136	.....	10	323	.....	.....	.....	.....	.....	.....	.....	.....
$29,252	21,377	$257,644	$5,000	$44,998	$194	1,635	$46,148	$3,759	$25,644	$15,773	$9,224	$3,063	$34,166	$1,450	$16,678
$1,762	11,403	$108,777	.....	$12,667	.....	312	$8,561	$1,890	$2,923	$262	$1,456	$25	$9,243	$4,568	$1,251
.....	74	1,306	.....	102	.....	.....	.....	.....	.....	.....	.....	.....	373	.....	367
1,212	3,609	43,035	.....	4,785	.....	265	6,871	.....	2,620	215	544	135	1,618	422	1,160
86	872	18,111	.....	630	.....	46	1,733	.....	416	137	34	.....	618	395	568
2,372	1,138	17,000	$16	4,639	.....	50	1,961	353	315	.....	19	143	1,070	3	815
21	262	3,823	.....	786	.....	.....	.....	.....	.....	.....	.....	29	204	.....	99
117	50	650	.....	163	.....	8	221	133	.....	.....	.....	.....	.....	26	.....
.....	10	81	.....	34	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	19	275	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
496	843	16,190	.....	1,473	$85	38	1,250	.....	93	121	121	77	1,293	.....	153
957	1,737	19,861	.....	1,493	.....	31	598	.....	3,291	162	60	296	497	109	409
1,599	1,280	20,524	100	4,288	52	.....	.....	274	358	.....	780	572	846	.....	169
$8,622	$21,297	$249,633	$116	$31,066	$137	750	$21,195	$2,650	$10,016	$897	$3,114	$1,277	$15,762	$5,523	$4,991
.....	$157	$1,442	.....	$282	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	3,221	34,697	.....	4,368	.....	$441	$8,374	$8,452	$177	$58	.....	$112	$432	$53	$6,284
.....	424	8,261	.....	614	.....	50	701	.....	20	.....	.....	.....	.....	.....	81
.....	3,736	34,016	.....	130	.....	88	1,484	.....	103	.....	.....	.....	.....	.....	622
.....	623	7,231	$322	862	.....	58	813	.....	41	11	$93	2,969	184	53	744
.....	40	382	78	117	$18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$184	3,510	39,763	.....	1,882	.....	385	9,837	803	692	.....	.....	19	69	109	259
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	311
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40
.....	314	2,360	.....	288	.....	10	170	.....	1,034	.....	.....	.....	.....	.....	45
.....	.....	.....	.....	.....	.....	.....	.....	.....	126	.....	.....	122	312	.....	714
.....	7,020	62,447	1,287	9,332	110	355	5,207	.....	1,338	687	1,051	.....	4,256	91	109
.....	20	150	.....	75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	260	4,546	.....	760	.....	.....	.....	.....	3,447	.....	.....	27	441	25	263
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16,893	5,436	60,323	136	7,407	.....	120	2,517	$7,493	1,062	.....	254	1,162	728	.....	968
.....	52	519	.....	99	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	69
$17,077	24,813	$256,137	$1,823	$26,216	$128	1,507	$29,103	$16,748	$8,040	$756	$1,398	$4,411	$6,422	$331	$10,509
.....	5,215	$71,964	$731	$7,925	$91	1,651	$51,158	$849	$12,358	$3,453	$489	$247	$4,895	$3,867	$5,814
.....	.....	.....	.....	.....	.....	2	130	.....	.....	.....	.....	.....	.....	.....	.....
71	7	133	8	.....	.....	6	307	11	13	.....	.....	.....	.....	.....	.....
.....	3,031	45,556	.....	5,082	.....	321	9,241	.....	1,784	576	224	13	1,318	5,686	3,086
.....	87	1,024	.....	226	12	.....	.....	70	.....	.....	.....	.....	.....	.....	.....
$71	8,340	$118,677	$739	$13,233	$103	1,980	$60,836	$930	$14,155	$4,029	$713	$260	$6,213	$9,553	$8,900

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth and Rubberized Fabrics Value
AFRICA												
British West Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British South Africa	$23,937	$8,882	$4,332	.....	2,493	$7,671	394	$664	3,864	$2,738	$722	$1,995
British East Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	536
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	331	.....
Egypt	310	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Algeria and Tunis	8,331	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other French Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liberia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Madagascar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	167
Morocco	9,632	417	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	4,207	.....	225	.....	.....	.....	.....	.....	250	125	.....	.....
Other Portuguese Africa	.....	.....	39	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, AFRICA	$46,417	$9,299	$4,596	.....	2,493	$7,671	394	$664	4,114	$2,863	$1,053	$2,698
GRAND TOTALS	$243,996	$210,990	$87,065	$133,561	85,586	$181,495	129,070	$123,913	454,698	$303,031	$87,356	$126,426

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	July 1925 Pounds	July 1925 Value	Seven Months Ended July, 1925 Pounds	Seven Months Ended July, 1925 Value
UNMANUFACTURED—*Free*				
Crude Rubber	72,699,696	$33,701,723	503,359,188	$181,829,484
Balata	103,887	55,890	407,777	190,264
Jelutong or Pontianak	2,447,474	235,217	10,477,868	1,080,016
Gutta percha	549,697	76,361	2,004,774	311,357
Guayule	766,399	156,188	4,129,857	764,037
Rubber scrap	3,982,365	118,809	11,548,603	470,035
Totals	80,549,518	$34,344,188	531,928,067	$184,645,187
Chicle—*dutiable*	550,758	$279,195	7,783,288	$3,880,995
MANUFACTURED—*dutiable*				
Rubber Belting	43,823	$35,948	443,412	$33,091
Other rubber manufactures of substitutes for rubber	.....	151,547	.....	655,499
Totals	43,823	$187,495	443,412	$688,590

Exports of Foreign Merchandise

UNMANUFACTURED				
Crude rubber	2,861,782	$2,132,681	18,580,825	$8,890,655
Balata	30,730	19,705	385,127	254,596
Jelutong or Pontianak	.....	.....	.....	.....
Gutta percha and rubber substitutes and scrap	.....	.....	92,151	4,906
Totals	2,892,512	$2,152,386	19,058,103	$9,150,157
Chicle	29,009	$13,268	121,655	$58,930
MANUFACTURED				
Gutta percha and India rubber	57,661	$62,261	120,485	$94,632
Totals	57,661	$62,261	120,485	$94,632

Exports of Domestic Merchandise

MANUFACTURED				
India Rubber				
Reclaimed	880,639	$102,737	5,479,662	$536,620
Scrap and old	2,952,746	145,605	20,268,009	878,112
Footwear				
Boots—*pairs*	85,586	181,495	433,370	1,026,947
Shoes—*pairs*	129,070	123,913	479,556	438,241
Canvas shoes with rubber soles—*pairs*	454,698	303,031	2,801,159	1,976,008
Rubber water bottles and fountain syringes—*number*	32,587	23,443	157,687	107,042
Other druggists' rubber sundries	109,298	112,427	505,363	549,943
Bathing caps—*dozen*	13,241	24,844	153,735	256,721
Hard rubber goods				
Electrical hard rubber goods	91,599	26,072	568,816	175,263
Other hard rubber goods	26,036	31,784	399,475	359,872

	July 1925 Pounds	July 1925 Value	Seven Months Ended July, 1925 Pounds	Seven Months Ended July, 1925 Value
Tires				
Pneumatic casings				
For automobiles—*number*	133,345	$1,597,545	937,135	$11,025,146
Others—*number*	3,867	10,676	33,713	124,254
Pneumatic tubes				
For automobiles—*number*	116,389	222,343	840,358	1,466,739
Others—*number*	1,017	1,015	28,138	27,175
Solid Tires				
For automobiles and motor trucks—*number*	8,020	212,633	63,060	1,627,551
Others—*number*	103,870	24,345	697,198	153,513
Tire accessories	228,721	97,793	1,329,880	562,307
Belting	460,079	243,996	2,427,250	1,369,691
Hose	576,310	210,990	3,203,770	1,212,683
Packing	181,877	87,065	979,238	449,914
Soles and heels	311,462	87,356	1,883,705	573,886
Thread	106,920	133,561	784,832	920,702
Other rubber manufactures	359,772	174,456	3,268,154	1,520,878
Totals	.....	$4,179,125	.....	$27,339,208

Imports of Crude Rubber Into the United States by Customs Districts

	July, 1924 Pounds	July, 1924 Value	July, 1925 Pounds	July, 1925 Value
Massachusetts	1,620,221	$340,933	1,776,394	$686,607
New York	39,784,690	8,369,628	65,141,084	30,491,096
Philadelphia	.....	.....	205,800	86,765
Maryland	1,343,720	293,923	1,014,037	387,803
New Orleans	.....	.....	770	141
Los Angeles	596,517	119,666	2,795,332	1,095,712
San Francisco	152,815	31,884	192,770	73,084
Oregon	44,800	11,327	.....	.....
Chicago	23,892	5,646	.....	.....
Washington	.....	.....	867,971	571,766
Michigan	.....	.....	369,526	183,539
Colorado	56,000	12,450	336,012	125,210
Totals	43,622,655	$9,185,457	72,699,696	$33,701,723

EXPORTS BY AMERICAN MANUFACTURERS OF CANVAS RUBBER-soled shoes totaled, during the twelve months ended June 30, 1925, 4,392,776 pairs, value $3,145,062. Similar shipments for the period of soles and heels reached 2,842,867 pounds, value $909,-241.

United States Crude and Waste Rubber Imports for 1925 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Total 1925	Total 1924	Balata	Miscellaneous	Waste
January—tons	28,480	989	325	54	112	....	29,960	21,611	22	1,462	206
February	21,740	1,203	120	224	163	6	23,456	31,763	48	908	241
March	31,067	1,906	287	305	346	3	33,914	17,752	25	1,022	186
April	25,403	1,167	332	78	244	7	27,231	42,436	38	987	243
May	34,187	1,834	287	203	364	14	36,889	23,914	30	816	182
June	28,522	990	225	294	299	7	30,337	18,840	33	1,160	143
July	32,147	977	335	117	321	21	33,918	18,469	46	976	371
August	29,921	598	160	456	364	85	31,584	20,076	36	641	388
Totals, 8 months, 1925—tons	231,467	9,664	2,071	1,731	2,213	143	247,289	.....	278	7,972	1,960
Totals, 8 months, 1924	183,598	8,024	2,028	404	807	...	.....	194,861	324	5,035	610

Compiled from statistics supplied by the Rubber Association of America, Inc.

United States by Countries During July, 1925 *(Continued)*

Water-proofed Outer Garments Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Solid Tires: Automobile and Motor Truck Number	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Tire Rubber Accessories, Repair Materials Value	Hard Rubber Goods: Electrical Supplies Value	Hard Rubber Goods: Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
.....	102	$1,247	.....	$110	$86	.....	.....	.....	.....	.....	.....	.....	.....	.....	$29
$4,794	1,866	24,522	166	3,356	19	141	$4,463	.....	$1,210	$34	.....	$331	$1,165	$2,990	3,431
.....	524	9,767	34	1,650	.....	.....	.....	.....	224	33	.....	.....	.....	.....	36
.....	314	4,815	.....	466	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	142	1,648	42	271	22	81	2,148	.....	.....	125	.....	.....	111	.....	644
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	6	108	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	2	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	19	798	.....	93	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	23	173	.....	.....	.....	.....	.....	.....	96	.....	.....	.....	.....	.....	.....
.....	22	318	.....	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$4,794	3,020	$43,446	$242	$6,006	$127	222	$6,611	.....	$1,530	$192	.....	$331	$1,276	$2,990	$4,140
$60,591	133,345	$1,597,545	$10,676	$222,343	$1,015	8,020	$212,633	$24,345	$97,793	$26,072	$31,784	$23,443	$112,427	$24,844	$97,638

United Kingdom Rubber Statistics

Imports

UNMANUFACTURED Crude rubber From—	July, 1925 Pounds	July, 1925 Value	Seven Months Ended July, 1925 Pounds	Seven Months Ended July, 1925 Value
Straits Settlements	5,532,500	£966,658	34,704,400	£3,392,878
Federated Malay States	2,314,700	417,459	14,190,700	1,398,789
British India	763,900	127,337	6,277,500	540,825
Ceylon and Dependencies	2,815,700	484,391	11,797,100	1,193,245
Other Dutch possessions in Indian Seas	675,300	119,767	5,098,300	468,310
Dutch East Indies (except other Dutch possessions in Indian Seas)	1,798,800	318,121	9,543,400	923,634
Other countries in East Indies and Pacific, not elsewhere specified	145,000	33,073	1,042,000	116,506
Brazil	252,700	28,189	5,024,900	375,474
Peru	2,800	330	15,400	1,650
South and Central America (except Brazil and Peru)	1,100	125	79,100	9,718
West Africa	.....	.....	.....	.....
French West Africa	91,600	6,926	1,110,900	61,579
Gold Coast	6,100	752	58,400	4,925
Other parts of West Africa	67,000	9,171	621,300	44,188
East Africa, including Madagascar	20,500	3,660	359,100	31,722
Other countries	131,300	22,352	717,900	88,574
Totals	14,619,000	£2,538,311	90,640,400	£8,652,017
Waste and reclaimed rubber	585,000	6,871	3,795,000	43,364
Gutta percha and balata	404,300	56,935	6,490,100	859,163
Rubber substitutes	62,800	3,599	122,700	5,413
Totals	15,671,100	£2,605,716	101,048,200	£9,559,957
MANUFACTURED				
Boots and shoes....*doz. pairs*	31,368	77,134	206,826	454,437
Tires and tubes				
Pneumatic				
Outer covers	.....	181,172	.....	1,785,580
Inner tubes	.....	32,707	.....	237,423
Solid tires	.....	20,501	.....	193,451
Other rubber manufactures	.....	127,053	.....	970,758
Totals	.....	£438,567	.....	£3,641,649

Exports

UNMANUFACTURED				
Waste and reclaimed	1,696,800	£20,131	8,914,900	£103,937
Rubber substitutes	92,500	2,057	729,700	16,830
Totals	1,789,300	£22,188	9,644,600	£120,767
MANUFACTURED				
Boots and shoes..*dozen pairs*	25,256	£41,544	176,786	£276,151
Tires and tubes				
Pneumatic				
Outer covers	.....	247,889	.....	1,703,121
Inner tubes	.....	50,027	.....	354,007
Solid tires	.....	31,812	.....	233,049
Other rubber manufactures	.....	289,396	.....	1,853,046
Totals	.....	£660,668	.....	£4,419,374

Exports—Colonial and Foreign

UNMANUFACTURED Crude rubber To—	July, 1925 Pounds	July, 1925 Value	Seven Months Ended July, 1925 Pounds	Seven Months Ended July, 1925 Value
Russia	35,300	£4,668	11,251,100	£917,542
Sweden, Norway and Denmark	157,700	17,675	1,272,900	106,083
Germany	1,068,200	135,393	13,558,100	1,097,435
Belgium	388,700	51,039	3,311,200	294,737
France	1,911,300	272,243	21,744,300	2,043,655
Spain	10,400	1,573	475,200	42,258
Italy	230,900	29,333	6,464,800	534,210
Austria	7,100	903	116,200	9,965
Hungary	.....	.....	7,600	585
Other European countries	200,000	18,809	1,509,500	117,572
United States	5,379,900	813,105	59,661,100	5,367,074
Canada	235,300	28,388	4,157,900	374,081
Other countries	56,800	7,164	619,000	52,380
Totals	9,681,600	£1,380,293	124,148,900	£10,957,577
Waste and reclaimed rubber	13,300	398	217,100	5,612
Gutta percha and balata	17,300	2,634	516,600	41,553
Rubber substitutes	.....	.....	55,200	2,659
Totals	9,712,200	£1,383,325	124,937,800	£11,007,401
MANUFACTURED				
Boots and shoes...*doz. pairs*	587	1,448	3,109	8,187
Tires and tubes				
Pneumatic				
Outer covers	.....	59,708	.....	194,983
Inner tubes	.....	6,158	.....	24,946
Solid tires	.....	782	.....	8,454
Other rubber manufactures	.....	8,196	.....	97,194
Totals	.....	£76,292	.....	£333,764

Landings, Deliveries and Stocks in London and Liverpool as Returned by the Warehouses and Wharves During the Month of July, 1925

	Landed for July Tons	Delivered for July Tons	Stocks, July 31: 1925 Tons	1924 Tons	1923 Tons
LONDON:					
Plantation	4,813	5,937	*4,058	51,829	*49,557
Other grades	..	15	*21	112	92
LIVERPOOL:					
Plantation	†154	†190	†270	†4,036	†5,543
Para and Peruvian	133	120	193	497	239
Other grades	..	1	19	210	218
Total tons, London and Liverpool	5,100	6,263	4,561	56,684	55,649

*Corrected by inspection.
†Official returns from the six recognized public warehouses.

DURING JUNE, 1925, THE UNITED STATES IMPORTED 72,025,729 pounds of crude rubber, value $26,855,883, as compared with similar importations in June, 1924, of 50,132,123 pounds, value $11,254,247.

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

	June, 1925		Three Months Ended June, 1925	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Rubber, gutta percha, etc.,				
From United Kingdom	123,128	$55,404	921,294	$364,163
United States	2,846,762	1,704,656	7,190,488	3,548,434
Straits Settlements	682,851	305,356	2,019,551	858,439
Dutch East Indies	56,000	23,479	139,745	54,155
Other countries	56,000	20,097	56,000	20,097
Totals	3,764,741	$2,108,992	10,327,078	$4,845,288
Rubber, recovered	593,436	$51,559	1,431,295	$175,933
Rubber, powdered and rubber or gutta percha scrap	622,148	$32,731	1,313,433	$64,051
Balata	.....	.....	1,094	848
Rubber substitutes	66,263	6,272	157,154	12,510
Totals	1,281,847	$90,562	2,902,976	$253,342
PARTLY MANUFACTURED				
Hard rubber sheets and rods	2,620	$1,574	93,392	$48,283
Hard rubber tubes	.....	.....	.....	120
Rubber thread not covered	15,336	16,288	41,382	43,481
Totals	17,956	$17,862	134,774	$91,884
MANUFACTURED				
Belting	.....	$17,597	.....	$49,247
Hose	.....	19,510	.....	60,953
Packing	.....	3,238	.....	11,433
Boots and shoes, *pairs*	1,293	2,823	5,217	11,385
Clothing, including waterproofed	.....	19,484	.....	49,140
Gloves	.....	1,072	.....	3,656
Hot water bottles	.....	338	.....	419
Tires, solid, *number*	44	1,999	2,003	8,659
Tires, pneumatic, *number*	1,827	22,696	8,089	104,959
Inner tubes, *number*	1,759	3,250	4,962	10,347
Elastic, round or flat	.....	21,987	.....	59,165

	June, 1925		Three Months Ended June, 1925	
MANUFACTURED	Pounds	Value	Pounds	Value
Mats and matting	.....	975	.....	5,123
Cement	.....	2,684	.....	8,856
Golf balls, *dozen*	5,714	24,695	15,416	63,684
Heels, rubber, *pairs*	9,845	1,007	15,105	1,232
Other rubber manufactures	.....	150,861	.....	398,545
Totals	.....	$294,216	.....	$846,803
Totals, rubber imports	.....	$2,511,632	.....	$6,037,317

Exports of Domestic and Foreign Rubber Goods

	June, 1925		Three Months Ended June, 1925	
	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$17,811	.....	$48,154	.....
Total	$17,811	.....	$48,154	.....
MANUFACTURED				
Belting	$21,676	.....	$103,433	.....
Canvas shoes with rubber soles	158,542	.....	465,000	.....
Boots and shoes	98,471	.....	282,652	.....
Clothing, including waterproofed	7,630	.....	12,311	.....
Hose	26,879	.....	49,790	.....
Tires, casings	604,204	.....	2,128,497	.....
Inner tubes	137,025	.....	383,347	.....
Solid	21,349	.....	54,299	.....
Other rubber manufactures	35,236	$3,114	100,121	$21,466
Totals	$1,111,012	$3,114	$3,579,450	$21,466
Totals, rubber exports	$1,128,823	$3,114	$3,627,604	$21,466

Plantation Rubber Exports from Dutch East Indies

Java and Madura

	April		Four Months Ended April	
To—	1924 Kilos	1925 Kilos	1924 Kilos	1925 Kilos
Holland	427,000	136,000	1,056,000	560,000
Holland for order	180,000	257,000	459,000	768,000
Great Britain	397,000	591,000	2,160,000	2,217,000
Great Britain for order	4,000	104,000	40,000	211,000
Germany	19,000	67,000	149,000	403,000
France and order	14,000	33,000	39,000	90,000
Belgium	.....	23,000	.....	75,000
Italy and order	33,000	49,000	106,000	229,000
Sweden	.....	.....	.....	3,000
Canada	.....	2,000	.....	2,000
United States and order	2,467,000	2,759,000	8,746,000	10,333,000
Singapore	166,000	118,000	861,000	509,000
Hongkong	5,000	.....	18,000	3,000
Japan	47,000	27,000	430,000	51,000
Australia	24,000	21,000	90,000	37,000
Totals	3,783,000	4,187,000	14,154,000	15,491,000
Ports of Origin:				
Tandjong-Priok	1,460,000	1,680,000	5,246,000	5,882,000
Cheribon	.....	2,000	19,000	25,000
Samarang	327,000	289,000	959,000	1,139,000
Sourabaya	1,579,000	1,566,000	5,898,000	5,980,000
Pasuruan	120,000	146,000	467,000	410,000
Probolinggo	206,000	124,000	507,000	382,000
Panarukan	25,000	146,000	429,000	846,000
Banjuwangi	57,000	96,000	253,000	360,000
Tjilatjap	9,000	136,000	376,000	463,000

Belawan

	April		Four Months Ended April	
To—	1924 Kilos	1925 Kilos	1924 Kilos	1925 Kilos
Holland	124,000	206,000	576,000	662,000
Great Britain	320,000	514,000	1,412,000	3,110,000
Germany	69,000	20,000	99,000	187,000
France	25,000	21,000	45,000	63,000
Belgium	.....	9,000	5,000	9,000
Italy	.....	65,000	36,000	168,000
Austria	.....	.....	32,000	.....
United States	2,021,000	1,513,000	9,427,000	6,754,000
British South Africa	7,000	.....	7,000	14,000
Penang	67,000	153,000	316,000	521,000
Singapore	75,000	139,000	338,000	350,000
Hongkong	.....	.....	30,000	.....
Australia	4,000	5,000	6,000	11,000
Other countries	.....	.....	1,000	1,000
Totals	2,712,000	2,645,000	12,330,000	11,850,000

Plantation Rubber Exports from Dutch East Indies

Java and Madura

	May		Five Months Ended May	
To—	1924 Kilos	1925 Kilos	1924 Kilos	1925 Kilos
Holland	257,000	153,000	1,313,000	713,000
Holland for order	119,000	206,000	578,000	974,000
Great Britain	709,000	454,000	2,870,000	2,670,000
Great Britain for order	.....	10,000	40,000	221,000
Germany for order	28,000	71,000	176,000	474,000
France for order	89,000	60,000	128,000	150,000
Belgium for order	9,000	17,000	9,000	92,000
Italy and order	28,000	34,000	134,000	264,000
Sweden	.....	.....	.....	3,000
Canada	.....	.....	.....	2,000
United States	2,014,000	2,365,000	10,760,000	12,698,000
South America	.....	61,000	.....	61,000
Singapore	216,000	202,000	1,077,000	711,000
Hongkong	9,000	.....	27,000	3,000
Japan	104,000	15,000	534,000	65,000
Australia	120,000	35,000	210,000	72,000
Totals	3,702,000	3,683,000	17,856,000	19,173,000
Ports of Origin:				
Tandjong-Priok	1,284,000	1,278,000	6,530,000	7,159,000
Cheribon	.....	1,000	19,000	25,000
Samarang	235,000	298,000	1,194,000	1,437,000
Sourabaya	1,644,000	1,530,000	7,542,000	7,510,000
Pasuruan	111,000	141,000	578,000	551,000
Probolinggo	31,000	69,000	538,000	451,000
Panarukan	180,000	145,000	609,000	991,000
Banjuwangi	58,000	113,000	311,000	473,000
Tjilatjap	159,000	107,000	535,000	571,000

Belawan

	May		Five Months Ended May	
To—	1924 Kilos	1925 Kilos	1924 Kilos	1925 Kilos
Holland	207,000	161,000	784,000	823,000
Great Britain	286,000	242,000	1,698,000	3,351,000
Germany	62,000	12,000	161,000	200,000
France	13,000	11,000	58,000	74,000
Belgium	.....	.....	5,000	9,000
Italy	24,000	17,000	60,000	185,000
Austria	11,000	.....	43,000	.....
United States	2,058,000	1,417,000	11,484,000	8,171,000
British South Africa	.....	.....	7,000	14,000
Penang	37,000	275,000	354,000	796,000
Singapore	58,000	81,000	396,000	431,000
Hongkong	.....	.....	30,000	.....
Australia	.....	10,000	6,000	21,000
British India	10,000	.....	10,000	.....
Java	.....	8,000	1,000	9,000
Totals	2,766,000	2,234,000	15,097,000	14,084,000

Crude Rubber Arrivals at New York As Reported by Importers

Parás and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases
AUGUST 19. By "Denis," South America.					
H. A. Astlett & Co.	144	....	91	....	....
Paul Bertuch & Co.	157	....	....	65	....
General Rubber Co.	246	12	16	34	....
L. Littlejohn & Co., Inc.	360	5	25	3	....
Meyer & Brown, Inc.	176	18	52	312	....
Poel & Kelly, Inc.	50	....	36	....	....
SEPT. 5. By "Cuthbert," South America.					
H. A. Astlett & Co.	258	....	364	3	....
Paul Bertuch & Co.	311	2	46	....	....
Paul Bertuch & Co.	....	....	‡105	††131	....
General Rubber Co.	509	28	88	205	....
L. Littlejohn & Co., Inc.	681	35	92	167	....
Meyer & Brown, Inc.	1120	....	175	252	....
Poel & Kelly, Inc.	381	....	18	682	87
SEPTEMBER 12. By "Sardinian Prince," Bolivia.					
Paul Bertuch & Co.	†99	....	....	....	....

†Biscuits ‡Skins ††Bales.

Plantations

AUGUST 17. By "Minnekahda," London. — CASES

General Rubber Co.	1,544
Meyer & Brown, Inc.	135
Chas. T. Wilson Co., Inc.	20

AUGUST 18. By "American Shipper," Europe.

L. Littlejohn & Co., Inc.	54

AUGUST 19. By "Westphalia," Far East.

Meyer & Brown, Inc.	284

AUGUST 21. By "Malakand," Far East.

General Rubber Co.	235
Meyer & Brown, Inc.	400
Poel & Kelly, Inc.	140

AUGUST 22. By "City of Oran," Far East.

Baird Rubber & Trading Co., Inc.	400
General Rubber Co.	520
L. Littlejohn & Co., Inc.	3,752
Meyer & Brown, Inc.	1,960
Poel & Kelly, Inc.	1,904
Chas. T. Wilson Co., Inc.	156

AUGUST 23. By "Malacca Maru," Far East.

H. A. Astlett & Co.	56
L. Littlejohn & Co., Inc.	112
Poel & Kelly, Inc.	490
Chas. T. Wilson Co., Inc.	185

AUGUST 24. By "Minnetonka," London.

Baird Rubber & Trading Co., Inc.	259
General Rubber Co.	10
L. Littlejohn & Co., Inc.	95
Chas. T. Wilson Co., Inc.	14

AUGUST 24. By "Volendam," Europe.

L. Littlejohn & Co., Inc.	241
Meyer & Brown, Inc.	140
H. Muehlstein & Co., Inc.	180

AUGUST 27. By "Blommersdyk," Rotterdam.

Baird Rubber & Trading Co., Inc.	*70

AUGUST 27. By "Nieuw Amsterdam," Rotterdam.

Paul Bertuch & Co. pkgs.	66
L. Littlejohn & Co., Inc.	54
Meyer & Brown, Inc.	654
H. Muehlstein & Co., Inc.	76

AUGUST 27. By "President Garfield," Far East.

H. A. Astlett & Co.	696
Paul Bertuch & Co.	205
Paul Bertuch & Co. bales	50
Baird Rubber & Trading Co., Inc.	1,542
The Fisk Rubber Co.	831
General Rubber Co.	10
L. Littlejohn & Co., Inc.	687
Meyer & Brown, Inc.	1,134
H. Muehlstein & Co., Inc.	650
Poel & Kelly, Inc.	400
Chas. T. Wilson Co., Inc.	980

AUGUST 28. By "Fairfield City," Far East.

H. A. Astlett & Co.	514
Baird Rubber & Trading Co., Inc.	400
General Rubber Co.	3,193
L. Littlejohn & Co., Inc.	1,143
Meyer & Brown, Inc.	1,563
H. Muehlstein & Co., Inc.	695
Poel & Kelly, Inc.	1,898
Chas. T. Wilson Co., Inc.	794

AUGUST 29. By "Moorish Prince," Far East.

H. A. Astlett & Co.	1,785
Baird Rubber & Trading Co., Inc.	1,192
Paul Bertuch & Co.	150
General Rubber Co.	2,463
Haldane, Bierrie & Co., Inc.	161
Hood Rubber Co.	*142
L. Littlejohn & Co., Inc.	3,068
Meyer & Brown, Inc.	2,400
Poel & Kelly, Inc.	2,340
Chas. T. Wilson Co., Inc.	2,324

*Arrived at Boston.
†Arrived at Los Angeles.
‡Arrived at Texas.

SEPTEMBER 1. By "Scottsburg," Far East. — CASES

H. A. Astlett & Co.	153
Baird Rubber & Trading Co., Inc.	350
General Rubber Co.	135
Meyer & Brown, Inc.	428
H. Muehlstein & Co., Inc.	50
Poel & Kelly, Inc.	10f

SEPTEMBER 1. By "American Trader," London.

General Rubber Co.	106

SEPTEMBER 3. By "Reliance," Hamburg.

Meyer & Brown, Inc.	151

SEPTEMBER 5. By "Ryndam," Europe.

L. Littlejohn & Co., Inc.	154

SEPTEMBER 5. By "Stadsdyk," Far East.

H. A. Astlett & Co.	591
H. A. Astlett & Co.	*102
Baird Rubber & Trading Co., Inc.	199
General Rubber Co.	2,592
Haldane, Bierrie & Co., Inc.	201
L. Littlejohn & Co., Inc.	4,047
Meyer & Brown, Inc.	1,353
H. Muehlstein & Co., Inc.	711
Poel & Kelly, Inc.	294
Chas. T. Wilson Co., Inc.	850

SEPTEMBER 8. By "Clan Macbeth," Far East.

Baird Rubber & Trading Co., Inc.	214
General Rubber Co.	271
L. Littlejohn & Co., Inc.	542

SEPTEMBER 8. By "Elveric," Far East.

L. Littlejohn & Co., Inc.	522
Meyer & Brown, Inc.	22
Poel & Kelly, Inc.	280

SEPTEMBER 8. By "Minnewaska," Europe.

H. A. Astlett & Co.	77
Baird Rubber & Trading Co., Inc.	82

SEPTEMBER 9. By "Tjikandi," Far East.

H. A. Astlett & Co.	102

SEPTEMBER 9. By "West Iran," Far East.

H. A. Aslett & Co.	†138

SEPTEMBER 11. By "Rotterdam," Holland.

Haldane, Bierrie & Co., Inc.	†225
L. Littlejohn & Co., Inc.	281

SEPTEMBER 12. By "City of Benares," Far East.

General Rubber Co.	5,907
L. Littlejohn & Co., Inc.	378
Meyer & Brown, Inc.	1,450
Poel & Kelly, Inc.	206
Chas. T. Wilson Co., Inc.	560

SEPTEMBER 13. By "Carmania," London.

Chas. T. Wilson Co., Inc.	100

SEPTEMBER 13. By "City of Melbourne," Singapore.

General Rubber Co.	44
L. Littlejohn & Co., Inc.	42
Meyer & Brown, Inc.	31
Chas. T. Wilson Co., Inc.	302

SEPTEMBER 13. By "Tyne Maru," Europe.

L. Littlejohn & Co., Inc.	200

SEPTEMBER 14. By "Minnekahda," London.

L. Littlejohn & Co., Inc.	71
Chas. T. Wilson Co., Inc.	46

SEPTEMBER 15. By "Katuna," Far East.

Baird Rubber & Trading Co., Inc.	1,536
Baird Rubber & Trading Co., Inc.	*50
General Rubber Co.	2,365
Haldane, Bierrie & Co., Inc.	370
L. Littlejohn & Co., Inc.	4,597
Meyer & Brown, Inc.	1,994
H. Muehlstein & Co., Inc.	960
Poel & Kelly, Inc.	3,229

SEPTEMBER 16. By "Titan," Far East. — CASES

Baird Rubber & Trading Co., Inc.	1,757
Baird Rubber & Trading Co., Inc.	*100
General Rubber Co.	4,640
Haldane, Bierrie & Co., Inc.	236
L. Littlejohn & Co., Inc.	2,646
Meyer & Brown, Inc.	2,407
H. Muehlstein & Co., Inc.	460
H. Muehlstein & Co., Inc.	*132
Poel & Kelly, Inc.	*250

SEPTEMBER 16. By "William Penn," Far East.

Baird Rubber & Trading Co., Inc.	350
General Rubber Co.	1,597
L. Littlejohn & Co., Inc.	719
Meyer & Brown, Inc.	838
H. Muehlstein & Co., Inc.	360

SEPTEMBER 17. By "Wales Maru," Far East.

Baird Rubber & Trading Co., Inc.	260
General Rubber Co.	283
L. Littlejohn & Co., Inc.	2,329
Meyer & Brown, Inc.	171

Africans

AUGUST 24. By "Franconia," Europe. — CASES

L. Littlejohn & Co., Inc.	11

AUGUST 29. By "Moorish Prince," Far East.

Hood Rubber Co.	*209

SEPTEMBER 2. By "Patagonier," Havre.

Poel & Kelly, Inc. bags	295

SEPTEMBER 5. By "Stadsdyk," Far East.

Hood Rubber Co.	*64

Balata

AUGUST 20. By "Matura," South America. — BALES

Middleton & Co., Ltd.	12

AUGUST 31. By "Paria," South America.

Middleton & Co., Ltd.	51

SEPTEMBER 4. By "Mayaro," South America.

Middleton & Co., Ltd.	24

Centrals

AUGUST 31. By "Arana," South America. — CASES

L. Littlejohn & Co., Inc.	50

AUGUST 31. By "Garfield," South America.

L. Littlejohn & Co., Inc.	100

SEPTEMBER 9. By "Cristobal," South America.

L. Littlejohn & Co., Inc.	24

Guayule

AUGUST 24. By "Monterey," Mexico. — CASES

Continental Rubber Co., of New York	1,680

AUGUST 24. By Railways, Mexico.

Continental Rubber Co., of New York	‡500

AUGUST 31. By "Agwistar," Mexico.

Continental Rubber Co., of New York	1,680

SEPTEMBER 7. By "Mexico," Mexico.

Continental Rubber Co., of New York	1,680

SEPTEMBER 14. By "Panuco," Mexico.

Continental Rubber Co., of New York	1,620

Manicobas

AUGUST 22. By "Brazilian Prince," Brazil. — BALES

Adolph Hirsch & Co., Inc.	72

AUGUST 30. By "Thode Fagelund," Brazil.

Adolph Hirsch & Co., Inc.	85

SEPTEMBER 1. By "Alegrete," Brazil.

Adolph Hirsch & Co., Inc.	85

Rubber Latex

AUGUST 29. By "Fairfield City," Far East. — LBS.

General Rubber Co.	201,398

SEPTEMBER 1. By "Scottsburg," Far East.

General Rubber Co.	283,942

SEPTEMBER 4. By "Stadsdyk," Far East.

General Rubber Co.	103,962

SEPTEMBER 16. By "William Penn," Far East.

General Rubber Co.	173,161

SEPTEMBER 16. By "Titan," Far East.

General Rubber Co.	61,488

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Vol. 73 OCTOBER 1, 1925 No. 1

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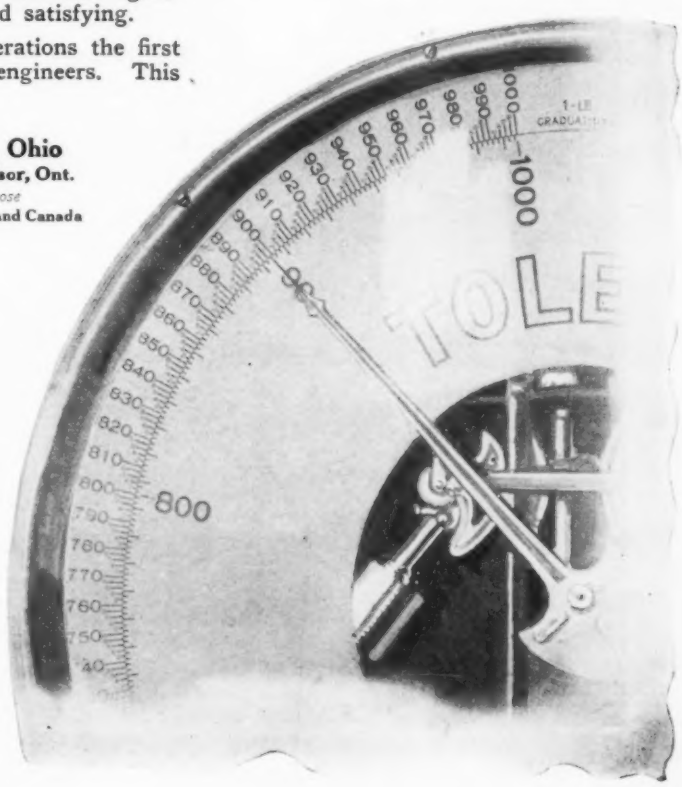
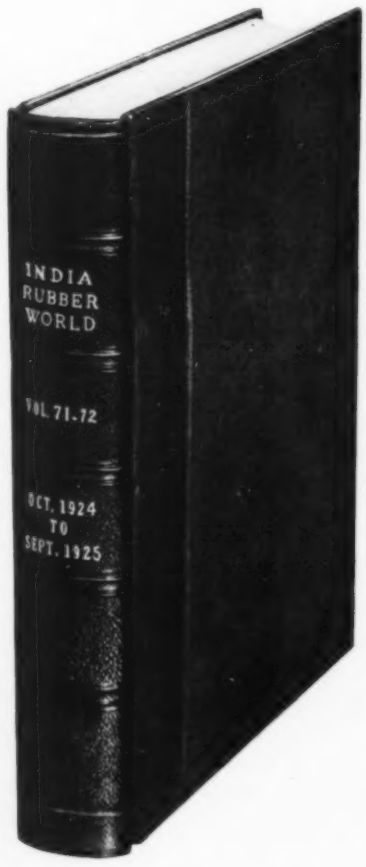


Our Publicity Page

Two More Volumes of *The India Rubber World*

INCLUDED with the October number *The India Rubber World* every year appears the annual reference index covering the twelve numbers from October of the preceding year to September of the current year, inclusive. Thus the present number includes the index to volumes LXXI and LXXII, comprising the publication year from October, 1924, to September, 1925, inclusive. During this twelve-month period *The India Rubber World* published over 760 pages of reading matter, or nearly one million words pertaining to rubber, and over 1,360 pages of advertising and directory matter of great suggestive and reference value to the industry.



What the Annual Index Reveals

Even a cursory examination of this annual subject index gives the reader some idea of the broad scope of this journal in its chosen field. The contents of a single issue impress the reader as voluminous and varied, but the comprehensiveness of the twelve issues of the year is simply stupendous. The eight three-column pages of fine type, approximately 2,000 titles, is by no means a full catalog of the minor articles and editorials, paragraph notes, sketches and bits of information of greater or less importance and interest to those connected with the rubber trade, however, for the progress of the rubber industry is recorded by many commerce and company reports, items of trade news and personal mentions not indexed.

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